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The British Army Staff

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE mutual ideals and interests of the governments of the United States and the British Commonwealth of Nations have been drawing these two powerful international forces closer and closer together. While this co-operation began to appear in the latter half of the nineteenth century, it has only matured in the last decade. Today, the United States has mutual defense treaties with several countries including the United Kingdom, Canada, New Zealand, and Australia. A British Commonwealth Division is fighting under the United States Eighth Army in Korea. Combined maneuvers are being held in Europe. Representatives of both countries—the United States and the United Kingdom—are on combined staffs. Students and instructors are exchanged at many service schools. It is apparent that, sooner or later, a large proportion of United States Army officers assigned to the staffs of higher commands will come in contact with British staff officers. The necessary co-operation and co-ordination can best be achieved if we have a general concept of the British Army staff system.

The British staff developed over many centuries, culminating, in 1912, in the staff system in existence today. This staff combined many features of the German staff system with traditional British terminology. The United States Army staff system, still in the development stage in the early part of this century, was markedly influenced by the necessity of working in close affiliation with the French in 1917. Thus the French influence is seen clearly in the organization of our staffs. It is hardly surprising, therefore, that the British and United States staff systems differ markedly in organization and nomenclature.

It is not the purpose of this article to determine which staff system is the better. Both have stood the test of battle exceedingly well—both Armies are well satisfied with their present systems. Since the members of both Armies do the same things such as eat, shoot, ride, get sick, and are "informed," the functions charged to the United States and British staffs are almost identical. However, the organization of the staffs, the titles of the responsible officers, the staff techniques that are used, and even the military terminology used show marked differences.

Officers of the United States and British Armies must study each others nomenclature and methods in order to best secure the co-operation needed to achieve ultimate victory over any common enemy

This article will outline the details of the British staff system, indicate the United States equivalents, and discuss the measures being taken to simplify the desired co-operation and co-ordination, both in peace and war.

While this article deals with the Army of the United Kingdom, the staffs of the Armies of Canada, Australia, and New Zealand are organized and trained similarly.

Main Branches of the Staff

The British have one single staff referred to simply as "The Staff." It is organized into three main branches.

1. The General Staff or "G" Branch (equivalent to the United States G2 and G3).

2. The Adjutant-General's or "A" Branch (equivalent to the United States G1).

3. The Quartermaster-General's or "Q" Branch (equivalent to the United States G4).

At corps and higher headquarters only, there is a small additional branch called the Military Secretary's (MS) Branch. It handles the promotion of senior officers and the assignments of senior officers and all staff officers, as well as efficiency reports, decorations, and similar matters. Although distinct from the "A" Branch, the two co-operate closely. At division and below, these matters are handled by the "A" Branch.

There is no general staff corps as such. Staff officers are assigned from any arm or service, while in that arm or service (lieutenant colonel and below) and while on the staff they retain their own uniform and insignia.

Duties of the Staff

The duties of the staff are:

1. To assist the commander in the exercise of his command functions.

2. To assist the combat troops and the services in the execution of their tasks.

Specifically, the *"G" Branch* is responsible for operations, training, intelligence, operational movements, and co-ordination in general. The *"A" Branch* is responsible for personnel administration, which includes enlisting the soldier, paying him, promoting him, his discipline and welfare, supervising his medical arrangements, and eventually discharging or burying him. The *"Q" Branch* is responsible for everything the soldier requires in the way of clothing, equipment, arms, ammunition, food, fuel, mail, transport, and for all administrative movements. These responsibilities essentially are the same as those allocated to the corresponding United States Army staffs except that the "A" Branch is charged with the supervision of the medical function.

In armies, corps, divisions, and brigades, the "A" and "Q" Branches are combined under one head. Thus, the British staff in a field army falls into two main categories, one of which is generally referred to as the General Staff ("G") and the other as the Administrative Staff ("A&Q").

The British now have a chief of staff at corps and higher headquarters. At the division and brigade levels, the senior "G" staff officer co-ordinates the work of all the branches.

There is a difference between the United States Army's Adjutant General's Corps and the British Adjutant-General's Branch. The British Adjutant-General's Branch, a part of the staff, performs essentially the same functions as the United States G1. Orders and communications in the British Army are signed by or for the head of the appropriate branch of the staff, that is, either "G," "A&Q," "A," or "Q."

Advisory Appointments

The British Army does not use the term "special staff," although for all practical purposes they have one. Attached to or forming part of the headquarters of for-

mations (a formation is an organization including more than one battalion, that is, a United States regiment or larger organization) are officers holding "appointments," whose duties are mainly advisory. These are broken down into various classes.

The "advisory branches" include the representatives of the arms such as the division artillery commander, known as the "Commander, Royal Artillery" (CRA); and the division engineer, known as the "Commander, Royal Engineers" (CRE), attached to the general staff. These officers advise the commander on matters affecting their own arms and may also command units of their own arm within the formation.

The "representatives of the services" (equivalent to United States technical service, and some administrative service, staff officers) are included in the headquarters of all formations. Their duties are similar to those of the "advisory branches."

"Technical appointments" include Intelligence Corps officers (equivalent to the officers of United States intelligence teams), technical staff officers, and technical general staff officers. The latter are specialists trained as advisers in technical fields such as in the use of special weapons.

"Miscellaneous appointments" include the fiscal and legal staff officers.

"Local appointments" (not MS or staff) may include the Camp Commandant (equivalent to our headquarters commandant), the Officer Commanding, Headquarters Squadron (comparable with our Commanding Officer, Headquarters and Headquarters Company), and certain medical officers attached to the headquarters.

Lastly, "personal appointments" include such officers as aides-de-camp to a general officer. Senior officers also may have assistants, called "Military Assistant" (MA), and "Personal Assistant" (PA). These appointments are normally found in static headquarters and not in formations below the field army.

British corps and division headquarters do not have an equivalent of the United States Inspector General or Adjutant General. There is no organic chemical officer. However, a technical staff officer expert in chemical warfare may be furnished by higher headquarters.

The "G" staff is responsible for the control of the "advisory branches." These include representatives of the arms, and such specialized activities as camouflage, chemical warfare, passive air defense, and psychological warfare. The "G" staff also controls survey (equivalent to the activities of a topographic battalion) and civil affairs/military government, the latter in conjunction with "A" and "Q."

Except as mentioned above, "A" and "Q" are responsible for the control of all services.

The primary mission of the head of service is to ensure that his own service functions efficiently. On technical matters he is given a free hand. He can deal directly with the units below him and with his senior equivalent at the next higher headquarters. He only needs to deal with the members of the "G," "A," and "Q" staffs on questions of policy, command, and control which involve several services.

The heads of services have varying titles which generally follow the designations noted in Figures 1 and 2.

Staff Grades and Titles

The British system of designating staff titles can be very confusing to the uninitiated. An understanding of the system is made even more complicated by the custom of the British to talk about staff officers and their appointments (assignments) by their abbreviated titles.

General staff officers in the field corps have one of four titles: Brigadier, General Staff (BGS); General Staff Officer, Grade 1 (GSO1); General Staff Officer,

Grade 2 (GSO2); or General Staff Officer, Grade 3 (GSO3). General staff officers of Grades 1 through 3 often are called "G1," "G2," or "G3," followed by their assignment. Thus, a GSO2 (Ops) or "G2 (Ops)" is a General Staff Officer, Grade 2, assigned to the operations section of the staff; and a GSO3 (Int) or "G3 (I)" is a General Staff Officer, Grade 3, assigned to the intelligence section of the staff.

The Brigadier, General Staff, is the senior "G" officer at a corps headquarters. He, therefore, is responsible for the equivalent of the United States G2 and G3 sections.

The GSO1 is a lieutenant colonel who heads the "G(Ops)" section in a corps headquarters. At the division level, a GSO1 heads the "G" staff and may function as chief of staff if the commanding general so directs.

The GSO2, a major, is an assistant to a senior staff officer or in charge of a "G" section at the corps level or is an assistant to the GSO1 at the division level. When assigned as the senior "G" officer on a brigade staff, he is called the "Brigade Major," a position comparable with the GSO1 at division.

The lowest grade general staff officer, the GSO3, is a captain who is usually an assistant in a general staff section.

The personnel ("A" or "AG") and supply ("Q" or "QMG") staff titles are more difficult to explain, but there are a few rules which cover them. First, look at the last two or three letters. This gives the branch, that is, either "AG," "QMG," or "A&QMG" when the branch duties are combined. Second, look at the first two or three letters. If only the prefix "D" is found (which stands for Deputy), it is a position that calls for a brigadier. If the prefix "A" is found (which stands for Assistant) the position is that of a lieutenant colonel. If the prefix is a combination of two ("DA")—which stands for Deputy Assistant—the holder of that post is a major. The lowest grade, captain, is easy. He is either a Staff Captain (A) or a Staff Captain (Q), depending on whether his assignment is in supply or personnel.

At corps headquarters, the Deputy Adjutant and Quartermaster-General (DA&QMG), a brigadier, functions as the equivalent of the United States Army corps G1 and G4 combined. This rank is also known as "Brigadier (A/Q)."

At the division level, the chief administrative staff officer is a lieutenant colonel known as the Assistant Adjutant and Quartermaster-General (AA&QMG).

In brigade headquarters, the administrative staff officer is a major with the title Deputy Assistant Adjutant and Quartermaster-General (DAA&QMG).

The equivalent of the headquarters commandant in American formations is known as the "Camp Commandant" at brigade, division, and corps. He also is referred to informally as "Camp."

Corps Headquarters

The corps headquarters is the highest field unit for which a War Establishment (United States Table of Organization and Equipment) is published in peacetime. It is designed to command up to four divisions and an equivalent proportion of corps troops. The headquarters is much larger than the United States corps headquarters, for the reason that the British corps is an administrative as well as tactical unit. It normally will establish its own corps maintenance area and support logistically all assigned or attached units. The equipment and personnel enable the British corps headquarters to be split into rear, main, and tactical (Tac) echelons.

The corps is the lowest unit having a chief of staff and representatives of the Staff Duties and Military Secretary's Branch. It will be noted that the rank of the officers making up the staff is much

OUTLINE ORGANIZATION OF BRITISH CORPS HEADQUARTERS
GOC
GENERAL OFFICER COMMANDING
(ADC)
AIDE-DE-CAMP
CHIEF OF STAFF
DEPUTY ASSISTANT MILITARY SECRETARY (DAMS)
DEPUTY ADJUTANT AND QUARTERMASTER-GENERAL (DAAG/MG)
CIVIL AFFAIRS/MILITARY GOVERNMENT STAFF
BRIGADIER GENERAL STAFF (BGS)
"Q" STAFF
"A" STAFF
1—AQMG
2—DAQMG
1—SC(E)
DAAG
SC(A)
MISCELLANEOUS APPOINTMENTS
CAMP COMMANDANT
3—MEDICAL OFFICERS
INTERROGATION TEAM
ATTACHED TO G STAFF
CORPS COMMANDER ROYAL ARTILLERY
CORPS COMMANDER ROYAL ENGINEERS
3—INTELLIGENCE CORPS OFFICERS
CHIEF SIGNAL OFFICER
ROYAL AIR FORCE METEOROLOGICAL SECTION
TECHNICAL OFFICER (SPECIAL WEAPONS)
SERVICES
DEPUTY DIRECTOR OF MEDICAL SERVICES
DEPUTY ASSISTANT CHAPLAIN GENERAL
ASSISTANT PROVOST MARSHAL
DEPUTY ASSISTANT DIRECTOR OF POSTAL SERVICES
DEPUTY DIRECTOR OF ORDNANCE SERVICE
DEPUTY DIRECTOR OF MECHANICAL ENGINEERING
STAFF OFFICER 1 (EDUCATION)
DEPUTY DIRECTOR SUPPLIES AND TRANSPORT
OPERATIONS
1—GS01
2—GS02
3—GS03
AIR
GS02
STAFF DUTIES *
GS02
LIAISON
1—GS02
3—GS03
INTELLIGENCE
1—GS02
2—GS03
ATTACHED ARE: PHOTO INTERPRETERS, FIELD SECURITY SECTION (EQUIVALENT US COUNTER INTELLIGENCE CORPS) DETACHMENT
* INCLUDES ORDER OF BATTLE, CONTROL OF MOVES, ORGANIZATION, PRIORITY OF ISSUE OF VEHICLES AND REGULATED ITEMS.
NOTE: A NUMBER OF SPECIALIST ATTACHMENTS WILL USUALLY BE MADE FROM ARMY GROUP OR ARMY.

FIGURE 1.

lower than that in a United States corps. The "G" Intelligence section is especially weak in rank and numbers as compared with a United States corps G2 section.

Infantry and Armored Division Staffs

The headquarters of the infantry and armored division staffs are identical except for the Camp Commandant sections. The GSO1 is the senior "G" officer and generally acts as an unofficial chief of staff, though this is not the case in all divisions. He is responsible for the co-ordination of the work throughout the whole headquarters. The AA&QMG is the senior representative of both the "A" and "Q" Branches, and also is responsible for the supervision and co-ordination of the work of the services.

Some services are represented at the division headquarters while others have a separate headquarters of their own. Those assigned to the headquarters are representatives of the Chaplain, Education, Medical, and Provost Services. Staff officers from the Army Welfare Service and Army Catering Corps normally are attached from higher unit pools. The Assistant Director of Medical Services commands all medical units in the division in addition to his role as medical adviser to the division commander and staff.

In the infantry division headquarters, the enlisted personnel such as cooks, orderlies, and clerks are commanded by the Camp Commandant. In an armored division, such personnel are assigned to a headquarters squadron. The Camp Commandant is the second in command of this squadron.

Air support and civil affairs/military government personnel may be attached from higher headquarters when needed.

The division headquarters is designed to be split into a main and a rear echelon. If a tactical headquarters is desired, it can be made up from the staff at main. A typical distribution of the staff and services between main and rear headquarters is shown below:

Main Headquarters

Commanding General
All the "G" staff
Intelligence staff and photo interpreters
Assistant Adjutant & Quartermaster-General
Assistant Provost Marshal
Commander, Royal Signals
Headquarters, Division Artillery
Headquarters, Engineer Field Regiment

Rear Headquarters

"A" & "Q" staffs
Medical staff
Education staff
Chaplain
Welfare
Catering
Camp Commandant
Headquarters, Royal Army Service Corps
Headquarters, Royal Army Ordnance Corps
Headquarters, Royal Electrical and Mechanical Engineers

Selection and Training of the Staff

All officers assigned to senior staff positions must be graduates of the Staff College. It is contemplated that all officers of the combat arms, and a proportion of the officers of the services, who demonstrate more than average ability, will attend this college.

Prospective Staff College students must be recommended by their commanding officers (usually battalion commander) and the recommendation approved by the next two higher echelons. This authorizes the officer to take a *Staff College entrance examination*, which is very comprehensive in nature. During the last few years, only about 25 percent of those recommended have qualified by passing this examination successfully. Having qualified, the officer's records and efficiency reports are examined by a War Office Selection Board. If ap-

OUTLINE ORGANIZATION OF BRITISH DIVISION STAFFS
GOC
GENERAL OFFICER COMMANDING (MAJ GEN)
(ADC)
AIDE DE CAMP (CAPT OR LT)
"A" & "Q" STAFF
"G" STAFF
(AA&QMG)
ASSISTANT ADJUTANT & QUARTERMASTER GENERAL (LT COL)
(DAAG)
DEPUTY ASSISTANT ADJUTANT GENERAL (MAJ)
1—STAFF CAPT (A)
(DAQMG)
DEPUTY ASSISTANT QUARTERMASTER-GENERAL (MAJ)
1—STAFF CAPT (Q)
CAMP COMMANDANT (CAPT)
HEADQUARTERS OF SERVICES
COMMANDER ROYAL ARMY SERVICE CORPS (LT COL)
COMMANDER ROYAL ARMY ORDNANCE CORPS (LT COL)
COMMANDER ROYAL ELECTRICAL AND MECHANICAL ENGINEERS (LT COL)
PAYMASTER (CAPT)
DIVISIONAL POSTAL OFFICER (CAPT)
CATERING ADVISOR (CAPT)
STAFF CAPTAIN (WELFARE)
ASSISTANT PROVOST MARSHAL (MAJ)
STAFF OFFICER EDUCATION (MAJ)
SENIOR CHAPLAIN TO THE FORCES (MAJ)
ASSISTANT DIRECTOR OF MEDICAL SERVICES (COL)
SERVICES
"A"
"Q"
(GS01)
GENERAL STAFF OFFICER, GRADE 1 (LT COL)
1—GS02 (MAJ)
OPERATIONS & TRAINING
G(OPS)
2—GS03 (CAPT)
INTELLIGENCE
G(I)
1—GS03 (CAPT)
1—IO (LT)
LIAISON
G(L)
1—GS03 (CAPT)
3—LTS
COMMANDER ROYAL ARTILLERY (BRIG)
COMMANDER ROYAL ENGINEERS (LT COL)
COMMANDER ROYAL SIGNALS (LT COL)
HEADQUARTERS SUPPORTING ARMS
ORGANIC STAFF.
ATTACHED.

FIGURE 2.

proved by this board, the officer is ordered to the next Staff College course.

An essential prerequisite for a prospective Staff College candidate is his attachment for a period of three or more months to a formation headquarters. He usually is attached as a "learner" staff officer and spends a period of his time with the "G," "A," and "Q" Branches. While this attachment may take place before or after he appears for the examination, it is preferable to have it happen before he takes the examination. Formations throughout the world also establish short courses of about 3 weeks duration to help prepare the candidates for the examination.

The Staff College is located in Camberley, Surrey, England, a small town about 30 miles southwest of London. Until the post World War II era, similar Staff Colleges were operated in Palestine and India. The faculty and facilities are established to train 240 students each year, but soon that capacity will be reduced to 180. About 10 percent of the students are officers from other countries, and normally the United States contingent numbers three officers. The 11-month course concentrates almost entirely on staff work in the field at brigade (United States regiment) and division level. Most of the instruction is carried on in 10-man classes supervised by an instructor. Groups and instructors are rotated about every 2 months. There are no graded examinations. Each student is required to turn in a certain number of papers which are meticulously commented upon to include the fine points of staff writing. From these papers, and from the individual's contributions to the group discussion, the instructor prepares and submits a detailed analysis of the student. At the end of the course, a division chief (in charge of six classes) prepares a final, detailed report.

The objective of the Staff College is to develop all of the students to the maximum extent possible. It is very rare for a student to be dropped for academic deficiency during the course. Apparently it is felt that having passed the careful screening required for selection as a student, the students are the best the Army has and all must be trained.

The officer normally enters the college between the ages of 28 and 32, in the grade of captain or major. Upon graduation, he is assigned to the staff vacancy then available most closely corresponding to his abilities and interests. Captains appointed as GSO2s are promoted to major. Officers then may be sent to short courses of roughly a month in duration to acquaint them with the details of the peacetime functioning of their assignment. Thus, an officer assigned as a GSO3 (Int) will be taught the details of intelligence work that were only covered in general terms during the Staff College course.

Upon graduation from the Staff College, the officer receives a special extra pay called "staff pay," currently 60 cents a day, for the remainder of his active service. His future assignments are determined by the Military Secretary's Branch in the War Office.

Assignment of Staff Officers

A unique feature of the British staff system at the present time is that the assignments of staff-trained officers are made at the War Office level by the Military Secretary's Branch. Graduates of the Staff College may be assigned directly to such positions as, for example, Brigade Major of a brigade in Malaya or GSO2 of a division in the Middle East. The formation commander can get rid of such a staff officer, but if he does he will be sent another. This is sharply different from the United States policy of allowing each commander to select his own general staff from the officers assigned to the unit. The British system has the advantage of distributing staff-trained, above-average officers equally throughout the Army.

The Camberley graduate is assigned directly to a staff position for a 2-year tour upon graduation. As far as possible after that, he will alternate 2-year staff tours with 2-year troop duty assignments. In addition, the staff assignments normally are alternated between the "G," "A," and "Q" Branches.

The British Staff Officer

The following remarks are taken from a lecture delivered to the 1951 Regular Course by the Chief, British Section, Command and General Staff College:

I think that one of the characteristics in the staff line, by your standards, is that the average British staff officer tends to work more slowly and more deliberately and, perhaps, in more detail. In 1945, General Bedell Smith gave a lecture in London on integrated allied staffs in war. He said that the organization of the staff mattered comparatively little. In Northwest Europe, at SHAEF, the United States system was chosen rather than the British because the Supreme Commander was an American. The only thing that mattered in his opinion was good will. He went on to say that he thought particularly highly of British intelligence and planning officers. The British planners left nothing to chance, but, if they were inclined to be too deliberate, this was corrected by the urge of the American officers on the staff to get to the stage of operations at the earliest possible minute. To quote: "The combination made an excellent team." So, therefore, in dealing with an average trained British staff officer, remember that he is inclined to be deliberate, but he does his work extremely thoroughly with great attention to detail. He leaves nothing to chance. If that is a mistake, it is, I think, a mistake on the right side, when you remember that any error by a staff officer may cost the lives of men, or at least cause them to go hungry.

Another thing, the British staff officer has little or no use for formulae, and standard or faculty solutions. We try to teach him basic *principles* and *methods*, and thereafter give him plenty of variations and examples of various problems. We never turn up the book and say: "Ah, this is Case B on Page 55—this must be the solution." We say that there is never only one solution to any one problem. We try to train our staff officers to approach each problem methodically, to estimate each factor logically, and then to work out the answer entirely on the particular merits of that particular problem.

All this may sound very similar to what you are taught here—there is no doubt, in fact, that both the United States and British approaches are precisely the same. Lastly, the average Britisher has a reputation for reserve and shyness (I have heard it called other names and not always complimentary). We are alleged to have a reputation for concealing our feelings which may, at times, make you think that we are rather slow-witted, or offhand or, what is worse, not co-operative. That impression may sometimes be there, but it is only an impression: it is not true. There are exceptions, of course—there are exceptions in any Army—but I can promise you that anything you ask of the average trained British staff officer will get done.

I will now qualify my foregoing remarks. After some experience with postwar trained staff officers, and after about 2 years here (the Command and General Staff College at Fort Leavenworth), I am not so sure that those comparative observations of mine apply so much now to our mutual, present-day regular staff officers. They will probably apply much more so in war, when our representative headquarters will be largely staffed by reserve and civilian officers, who naturally are more obviously true to the characteristics of the American and the British peoples.

United States officers who have worked closely with British officers in recent years agree that these comments are quite accurate.

Conference Methods

The fact that the British staff-trained officer does pay great attention to detail will be testified to by most United States officers who have participated in combined United States-British conferences.

As taught at the Command and General Staff College, a conference is a meeting for the exchange of thoughts and reactions in order to arrive at a decision or at a conclusion upon which a decision may be based. In practice, a conference usually is a meeting of a group of officers to work out a solution to a common problem.

The British concept of a conference is quite a different matter. To the British officer, a conference generally is a method by which approval is secured for a previously determined position. Centuries of experience in international conferences have resulted in the development of a remarkable skill in this field.

The British concept of a conference is clearly expressed in the following British Staff College advice to a conference secretary: "The instructions for the conference should start by stating clearly the exact purpose for which the meeting is being called and should be accompanied by the agenda. The objects of issuing agenda are to induce those attending to collect the necessary information and *sort out their ideas beforehand*, and to limit discussion at the conference to what is strictly relevant to the matter to be settled."

Thus it is expected that each member of the conference will know precisely what his position will be on all matters under discussion. He further will know exactly how much he can concede to win the conference's approval of his position.

All of the legitimate techniques of conference methods are employed. Each interested agency hand-picks its representative. All strive to have their agency represented by the senior officer at the conference—a decided advantage since he will act as presiding officer. Each conferee knows exactly what his agency desires in the matter. Great care then is given to the matter in which conference approval is secured on the essentials. For example, minor points which can be conceded are listed. The agency can take a stand on points in which it has little interest, or in which it does not have any hope of securing acceptance. Thus the conferee has numerous points that he can patiently fight for and on which he is authorized to agree finally to an adverse decision. Having had so many point(s) conceded, the other conferees may feel under some obligation to agree to the major points the conceder is really after.

In a combined conference then, it can be expected that all of the British representatives will be hand-picked, that they will all have the same position (although they may not *seem* to), that they will have been meticulously briefed and carefully rehearsed, they probably will have the senior officer present and thus the conference chairman, and that every legitimate conference technique will be employed to secure conference approval of their position. Against such a formidable combination, it certainly behooves other conferees to resort to equally careful preparation.

Standardization Measures

From this discussion, we have seen that there is a marked similarity in the functions of the British and United States staffs. For every function performed by the United States staff, a corresponding responsibility is charged to some part of the British staff. Usually we consider that both nations speak the same language. It is apparent, however, that there is a considerable difference in their *military* language, in methods, in staff techniques, and in the responsibilities of the supporting services. (A discussion of this last point is not part of this article.)

As the British and United States Armies began to work in closer harmony in the last decade, it became apparent that even a thorough understanding of each others staff and methods was not sufficient to ensure the desired co-ordination and co-operation. Accordingly, "standardization" committees were set up at the Pentagon-Whitehall level. A great deal of publicity recently has been given to the work being done on the standardization of screw threads and weapons. However, it is not generally realized how much work has been done in standardizing staff techniques and procedures. These committees have been meeting since about 1947 and the results are beginning to appear. The same radio-telephone procedure has been adopted. The symbols in the recently issued Field Manual 21-30, *Military Symbols*, will be used by both Armies. Ab-

breviations are being standardized—with virtually the same caustic comments being uttered by officers on both sides of the Atlantic. In a recent agreement, the British reversed its traditional map colors for friend and foe. On British maps, the enemy now will be shown in red and friendly units in blue. It is apparent that even the smallest differences are being examined to see if we cannot adjust them for common usage.

The success of the standardization work will be of great assistance in international co-operation. It is most unlikely, however, that complete standardization will ever be effected—and there are sound reasons why it should not be. As a result, the officers of both Armies must continue to study the nomenclature and methods of their allies in order to best secure the co-operation needed to achieve the common goal—ultimate victory over any common enemy.

NEXT MONTH

Main Articles

What Is Calculated Risk? by Lieutenant Colonel Wilbur E. Showalter; and *Armor in Retrograde Movement* by Lieutenant Colonel Thomas O. Rooney are included among the main articles.

Foreign Military Digests

The foreign digests include "Resistance Movements" from *Ny Militar Tidskrift* (Sweden); and "The Study of War" from the *Australian Army Journal.*

Books for the Military Reader

Reviews of *War for the World* by Fletcher Pratt; and *They Fought With What They Had* by Walter D. Edmonds are included.

Military Leadership

Lieutenant Colonel John H. Carter, *Artillery*
Instructor, Command and General Staff College

THE military profession, and rightfully so, has no monopoly on leadership. In every walk of life, in every industry, in every government, in every phase of human endeavor, there must be leaders as well as followers. Today, more than ever in history, the Army is in need of leadership of the highest caliber. Science and modern developments have increased the complexity of warfare, yet no matter how complicated warfare may become, it will always be waged by men. The men who are capable of leading others are indispensable in waging a successful war. It follows, then, that we must make certain that every potential leader is discovered early and developed rapidly, for the forward progress and the success of our Army are dependent upon the quality and efficiency of our military leaders.

Responsibilities

The responsibilities of the military leader are twofold. They are:

1. *Accomplishment of the mission.*—The primary duty of the military leader is the accomplishment of his assigned mission. Everything else, even the welfare of his men, is subordinate.

2. *Duty to his subordinates.*—The secondary responsibility of the military leader lies in his duty to his subordinates. It is rarely possible to accomplish successfully any assigned military mission without paying particular attention to the *morale* and *esprit* of subordinates. In the military service, the subordinate is peculiarly dependent upon his leader and can do little to improve conditions if they are neglected by his superior.

Indications

There are four characteristics of a military organization that are accurate indicators of success or failure in the exercise of leadership, namely discipline, morale, *esprit de corps*, and efficiency.

Discipline

Discipline is the state of order and obedience existing within an organization. It involves the ready subordination of the will of the individual for the good of the organization. The need for discipline can best be inculcated in the individual by appealing to his sense of reason. Discipline can be created within a military organization by training, judicious use of punishments and rewards, and by instilling confidence and a sense of responsibility in each individual. Military discipline is no more than the extension and specialized application of the discipline of any organized society.

Morale

Morale is the manifestation of the mental and emotional state of the individual. The importance of morale cannot be overemphasized since it is a great contributing factor to the efficiency of an organization.

Esprit de Corps

Esprit de corps is the manifestation of the mental and emotional state of an organization. An organization with high *esprit de corps* can accomplish its assigned mission in spite of seemingly insurmountable odds. It has been proved that an individual's pride in his organization is an indication of high morale and efficiency. *Esprit de corps* in a military organization can be accomplished by good leaders.

Efficiency

Efficiency in a military organization is the ability to accomplish successfully any reasonable assigned task, or to initiate suitable action in the absence of orders. Efficiency within a military organization can be developed by sound training and effective administration by competent military leaders. It is enhanced by good discipline, high morale, and *esprit de corps.*

Psychology

Psychology, the study of human behavior, is closely linked with leadership. With a knowledge of how human beings respond to a particular set of circumstances and with an understanding of the basic factors that control human behavior, the military leader can capitalize on favorable reactions and minimize unfavorable ones.

Ethics

Ethics, the science of moral duty, is very closely allied with the art of leadership. A knowledge of ethics will assist materially in dealing with subordinates, in deciding whether a given course of action is morally right or wrong. Conscientious application of moral principles will ensure that the leader does not embark on a course of action that violates such principles, for if he does the leader will lower his stature in the eyes of his subordinates. Temporizing with moral principles or standards may secure a temporary advantage, or fleeting popularity, but in the long run the leader will profit by strict adherence to the highest standards of honor and integrity.

Leadership Principles

The United States Army has adopted 11 leadership principles, the results of an analysis of outstanding leadership displayed by successful personalities, both military and civilian. A thorough study of these principles, combined with putting them into actual practice, will develop the high caliber of leadership so urgently needed in our Army. The 11 principles, together with a brief discussion of them, are listed below. They apply equally at all echelons of command.

Know Your Job

To know his job thoroughly, the leader must possess a wide knowledge of the technical and tactical aspects of the operation of his organization. He also must possess a sound understanding of human relations. Further, he must have a working knowledge of the duties, responsibilities, and problems of his subordinates.

Know Yourself and Seek Improvement

Any individual who does not know his capabilities and limitations is not master of himself. It is the duty of every leader to recognize his strengths and weaknesses, to capitalize on his strong points, and strive to improve his weaknesses. If he fails to do this, he cannot hope to be successful as a leader.

The quality of leadership is not inherent. Developing the art of leadership is a continuing process which depends upon traits which can be developed, and upon the application of principles which can be learned

Know Your Men and Look Out for Their Welfare

A leader must make a conscientious effort to observe the living conditions of his subordinates and to ensure that they are as comfortable, well cared for, and as contented as circumstances permit. He must see his subordinates and let them see him; he must be friendly and approachable. He must ensure that a fair and equitable distribution of such privileges as passes, leaves, and rotation are in effect and adhered to. By neglecting the welfare of his subordinates, the leader indicates indifference and, as a consequence, forfeits the trust and confidence of the followers. As a result, he will not be able to obtain maximum effectiveness in the employment of his command.

Keep Your Men Informed

The subordinate who is well informed about the mission, the situation, and the purpose of any particular task is much more effective than the one who is not "in the big picture." The leader who fails to make essential information available to subordinates will find that they are performing blindly and without purpose; under these conditions maximum effectiveness cannot be obtained. However, military commanders at all levels must realize that security requirements may impose restrictions or limitations on the information that can be imparted to subordinates and be governed accordingly.

Set the Example

The American youth look instinctively to their superiors or leaders for patterns of conduct which they emulate or use as an excuse for their own misbehavior or shortcomings. By his appearance and conduct, a good military leader can evoke praise, pride, and the desire to emulate him. By an outstanding performance of duty, mental alertness, good grooming, and proper dress, the leader can set the standards for the followers. The leader who appears in an unfavorable light before his subordinates destroys the mutual respect that must exist between them.

Ensure That the Task Is Understood, Supervised, and Accomplished

The leader must give clear, concise orders that cannot be misunderstood. Then, by close supervision, he must ensure that his orders are properly and promptly executed. The ability to think logically and to issue clear, concise, positive orders can be developed. Through study and practice, the able leader will make wise use of his subordinates to carry out effective supervision. Any commander of a large military organization who fails to make proper and adequate use of his staff and subordinate commanders in supervising his leadership program demonstrates a fundamental weakness in leadership.

Train Your Men as a Team

An effective leader will emphasize team training, predicated on modern, realistic conditions. All training must be purposeful and the reason for training as a team stressed and understood by all members of the organization. The highest standards of discipline and teamwork must be demanded by the leader. The leader must make sure that the best available facilities for team training are provided. Our modern armies are complex organizations involving many different arms and services, all working together as a team toward a common end. Each arm and service must understand where it fits into the over-all team. The commander who fails to foster teamwork will not obtain the desired degree of unit efficiency.

Make Sound and Timely Decisions

In order to make sound and timely decisions, the leader must develop logical and orderly thought processes. The ability to make a rapid estimate of any situation

and arrive at a sound decision can be developed by constant study and practice in making estimates. This ability is an essential element of successful leadership. The uncertain leader creates a spirit of vacillation, a lack of confidence, hesitancy, and indecision within the organization itself. However, when the situation demands a change in plans, the leader must act promptly without fear that subordinates may consider such actions as vacillatory.

Seek Responsibility and Develop a Sense Of Responsibility Among Subordinates

By seeking responsibility, the leader develops himself professionally and increases his potential abilities. The leader must demonstrate that he is ready and willing to accept responsibility. However, the proper delegation of responsibility and authority to subordinates likewise is a sound attribute of leadership. A reluctance to delegate responsibility and authority is a definite weakness and will result in hindering the development of a sense of responsibility among subordinates.

Employ Your Command in Accordance With Its Capabilities

To employ his command properly, the leader must know, understand, and apply the principles of war. He must have a thorough knowledge of the tactical and administrative capabilities and limitations of his organization. The leader must make every effort to equalize tasks, over appropriate periods of time, among the several elements of his command. To do less than this may spell failure in accomplishing the mission.

Take Responsibility for Your Actions

The commander of a military organization is responsible for everything his organization does, whether it be good or bad. The leader must recognize and acknowledge this concept. Any effort by the leader to evade this responsibility will destroy the bond of loyalty and respect that must exist between the commander and his subordinates in a military organization.

Leadership Traits

Leadership traits are human qualities the possession of which is of great value to the military leader. They simplify the task of leadership, and assist greatly in winning confidence, respect, and loyal cooperation. A study of our Nation's great military leaders reveals that none of them possessed all the leadership traits to the maximum degree, but that deficiencies in some traits were compensated for by strengths in others. The following list of leadership traits is by no means all-inclusive, but it does contain those of paramount importance to a successful military leader.

1. *Alertness.*—Alertness is vigilance, promptness, and wide-awakeness.

2. *Bearing.*—Bearing denotes desirable physical appearance, dress, and deportment.

3. *Courage.*—Courage must be both physical and moral.

4. *Decisiveness.*—Decisiveness is the ability to make decisions promptly when indicated and announce them authoritatively, concisely, and clearly.

5. *Dependability.*—Dependability is the doing of one's duty with or without supervision.

6. *Endurance.*—Endurance, both mental and physical, is necessary to continue and complete any reasonable task.

7. *Enthusiasm.*—Enthusiasm is the positive zeal or interest in a task at hand. It is communicated easily to subordinates.

8. *Force.*—Force is the ability to impose one's will upon another.

9. *Humility.*—Humility is freedom from arrogance and unjustifiable pride.

10. *Humor.*—Humor is the capacity to appreciate the many amusing or whimsical happenings of our everyday life, especially those which pertain to the leader himself.

11. *Initiative.*—Initiative is the willingness to act in the absence of orders and

to offer well-considered recommendations for the improvement of the organization.

12. *Integrity.*—Integrity is the honesty and moral character of the leader. It must be unquestioned.

13. *Intelligence.*—Intelligence is the intellect of the leader which must be adequate to master the problems presented.

14. *Judgment.*—Judgment is the power of the mind to weigh various factors and arrive at wise decisions.

15. *Justice.*—Justice is being equitable and impartial in bestowing favors and punishment.

16. *Loyalty.*—Loyalty must extend both up and down. A leader cannot expect loyalty from his subordinates unless he is conspicuously loyal to them as well as to his superiors.

17. *Sympathy.*—Sympathy is the capacity of sharing the feelings of those with whom one is associated.

18. *Tact.*—Tact is the ability to deal with subordinates and superiors in an appropriate manner without giving offense.

19. *Unselfishness.*—Unselfishness is the studied avoidance of caring for or providing for one's own comfort or advantage at the expense of others.

Relationship Between Leadership And Command

We, in the military, like to think of military leadership as being exercised within the command framework of the organization. Commanders of military organizations must accept responsibility for and exercise leadership when dealing with subordinates under their command.

Proper training in leadership is the crux of successful combat operations. Battlefield conditions demand the making of decisions and the carrying on of operations which test the leadership ability of officers and noncommissioned officers of all ranks and grades to an extent which does not exist elsewhere. It is impossible to bridge completely the gap between training and conditions as they exist on the battlefield. Factors which may damage the combat potential of a military organization include fear, panic, discouragement, isolation, and lack of confidence in the organization or leader. Normally, it is the commander of the small unit who must counteract such factors. However, it is the leader of the larger unit who trains and indoctrinates him in those traits of leadership which should be instrumental in counteracting the disintegrating factors. The greatest opportunities for fear and panic usually occur during the baptism of fire, retrograde movements, or when units are widely dispersed or small units become isolated. Fear cannot be prevented, but it can be controlled within small units by competent leaders. Panic can be prevented if fear is controlled.

Objective of Military Leadership

The objective of military leadership is the creation and maintenance of military organizations which will loyally and willingly accomplish any reasonable task assigned or indicated, even in the absence of orders. The proper application of leadership principles will assist materially in creating an efficient, well-disciplined, military organization possessing high morale and *esprit de corps.* Developing the art of leadership in the military profession is a continuing process which involves the recognition and practice of the basic traits of leadership, and the understanding and application of sound leadership principles and techniques.

Leadership is *not* inherent; it depends upon traits which can be developed, and upon the application of sound leadership principles which can be learned.

We can increase our military potentials by developing more and better leaders.

'RIG FOR DIVE'

Training for Duty With 'The Silent Service'

THE modern submarine is a deadly, ingenious, and effective weapon of war, with more science packed into it, for each square inch, than any other warcraft. Recognized as a legitimate instrument of war since the Civil War, it has been used for many and varied missions, including combat, rescue, supply, patrol, raider, transport, and evacuation duties.

The torpedo, its major weapon, can be discharged from any of the boat's nest of 10 tubes. Because of the destructive power of the "tin fish," a single hit could cripple or sink the mightiest warship afloat.

During the last war, submarines of the United States Navy destroyed 214 Japanese naval vessels and 1,178 merchant vessels of 500 or more gross tons. Comprising less than 2 percent of the Navy's total personnel during the war, the submarines accounted for two-thirds of all enemy ship losses.

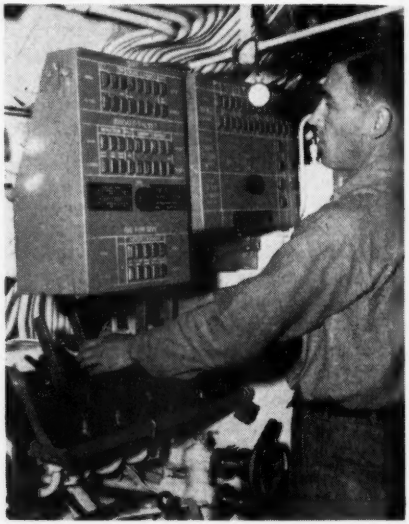
Back of this impressive record is the story of the submarine training at the United States Naval Submarine Base near New London, Connecticut. Practically all the officers and men who wear the "twin dolphin" insigne of the qualified submariner receive their initial training at this school. All of them volunteer for this duty; few have any desires for a change after earning their "dolphins."

A submarine is an intricate, highly complicated piece of machinery built with the precision of the watchmaker's art. Consequently, personnel selection has been necessary in this service.

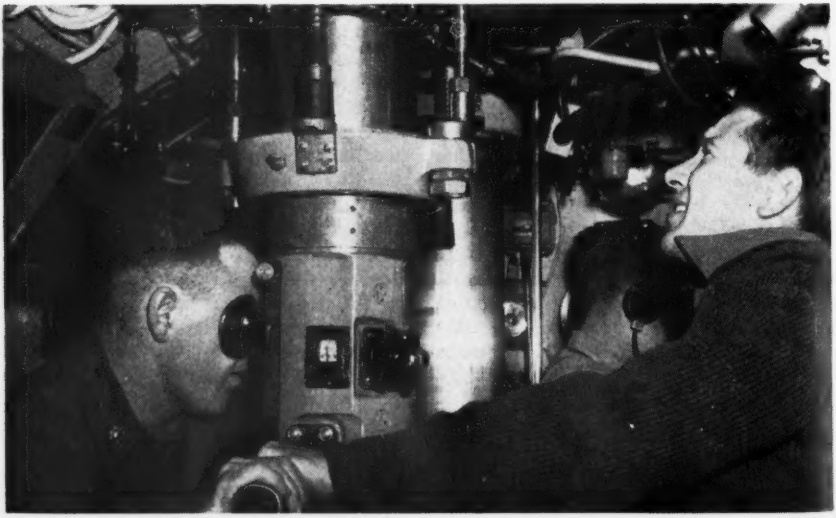
After qualifying both physically and psychologically for submarine duty, enlisted personnel receive 8 weeks' basic training in appropriate subjects. Instruction in classrooms and training devices, coupled with "underway" operation aboard a "live" submarine, forms a sound foundation in undersea warfare fundamentals. An enlisted man who graduates from the school and reports to his first "boat" is not a finished submarine sailor. There still is a great deal for him to learn about his special rating, as well as the detailed working of the submarine itself. After the successful completion of a 6 months' test aboard, and recommendation by the commander, he rates an entry in his service record which states that he is "qualified in submarines" and is, thereby, entitled to wear his "dolphins."

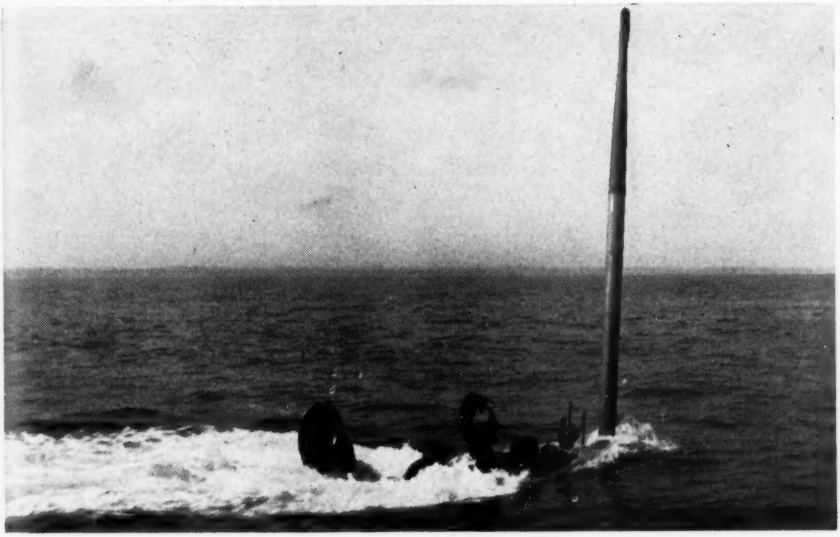
With the building of newer and more complicated vessels, the submarine will take an indisputable place as one of the most formidable weapons of our sea power. By the nature of its operations, the submarine service is shrouded in secrecy. As a result, it has long been known as "The Silent Service."

A submarine is an intricate, highly complicated piece of machinery built with the precision of a watch. Therefore, 'The Silent Service' selects its personnel carefully and trains them physically and psychologically



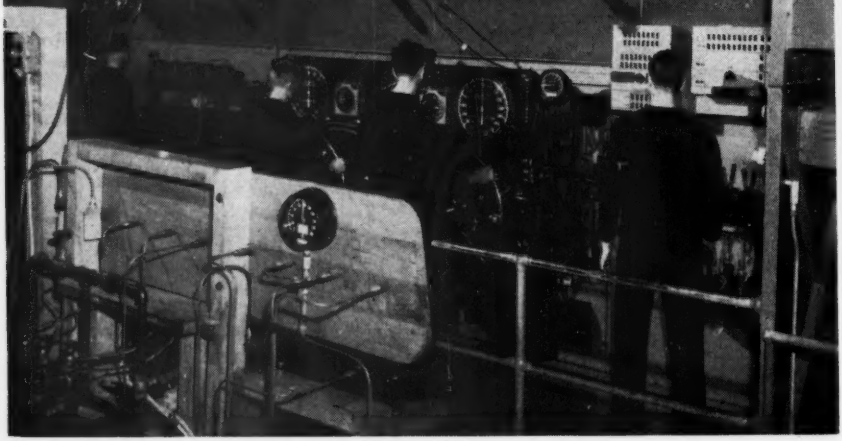
Above left, a student operating the bow and stern diving planes of a submarine. Above right, a student submariner checking his station for readiness following the command to "rig for dive." Below, a submarine commander lining up the target while another officer notes the bearing on the dial pack of the periscope.—Department of Defense photos.

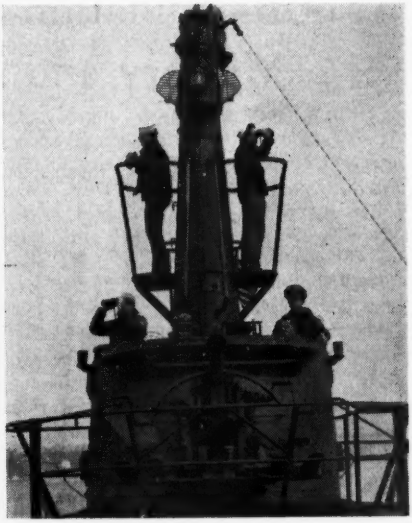




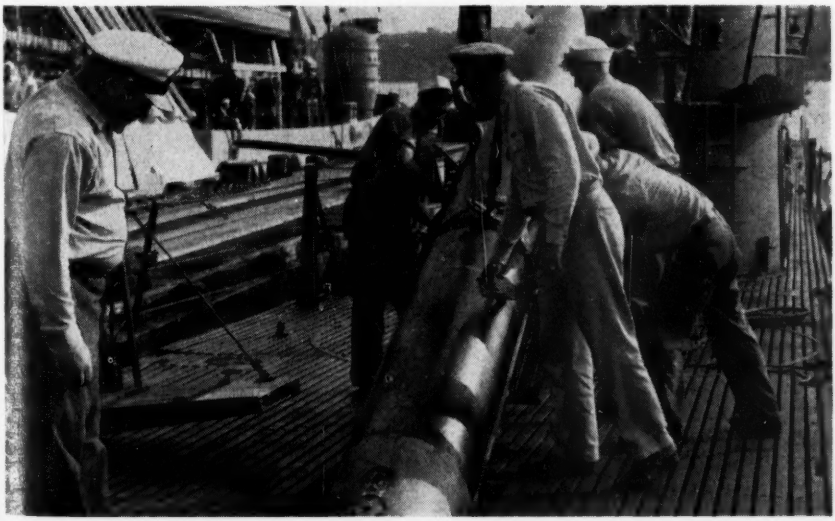
Above, the periscope of the submarine through which the commander and his student officers spot the practice target, get proper range and bearing, and fire their torpedoes. Below, a submarine resting in a drydock where she will receive a thorough inspection and necessary repairs before returning to duty status.—Department of Defense photos.

Escaping from a disabled sunken submarine requires the use of a Momsen lung. Above, submarine candidates learning its operation in a 100-foot water tank used for training purposes. Below, future submariners learning how to control a submarine below the ocean's surface through the use of the Askania Trainer.—Department of Defense photos.





Above left, officer candidates for submarine service undergoing instruction in docking methods at the New London training school. Above right, a group of students performing lookout duties during a cruise. Below, student officers and men loading electrical torpedoes in preparation for a day's operation at sea.—Department of Defense photos.



Co-ordination of United States Military and Foreign Policy

Brigadier General P. M. Robinett, *USA-Ret.*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

CLAUSEWITZ, a philosopher of war, has said that war is a continuation of policy by other means, which is to say that force is used in the pursuit of national policy when diplomacy has failed to obtain the desired ends. If this widely accepted view is correct, it is apparent that national policies relative to peace and war must be co-ordinated and directed by the same individual. The authors of the Constitution appreciated this point and fixed the responsibility of formulating military and foreign policy on the President of the United States, with the advice and consent of the Senate in matters of foreign policy. He is, thus, the controlling influence in these two important aspects of our Nation's affairs. A study of a President's success or failure in this important duty requires an examination of American foreign policy and its effect on military policy, the co-ordination of the policies that have been developed, and the effectiveness of the existing system in meeting our needs in the past or of the present.

Original Concept

The framers of the Constitution, having in mind the smallness of the legislative bodies which then existed, apparently intended that the Senate actually should confer with the President on matters of foreign policy, thus acting both as a consultative and a legislative body. In the formative years of the Government, problems of foreign policy were outweighed greatly by those concerning the establishment of the new order at home. There is, therefore, no record to show that a President met with the entire Senate to discuss matters of foreign policy. Gradually, with the passing of years, such advice as the President received was expressed either in the form of informal suggestions by majority leaders, with minority leaders being called in upon certain occasions, by resolutions suggesting Presidential action, by cuts in appropriations for the State Department, or by modification or defeat of treaties. Strong Secretaries of State and Secretaries of War and Navy were depended upon to draw up outlines of policy for the President to consider, and, in some cases, such secretaries virtually determined the policy of the United States. In view of the record of conflict between the Senate and the Executive, it is to be regretted that a serious effort was not made to determine the workability of the founders' concept.

Two Sides of the Same Coin

In studying the co-ordination of United States military and foreign policy, it is necessary to remember that they represent the two sides of the same coin. Foreign policy represents the peaceful method of regulating the affairs of the United States with foreign nations, but since national interests may be in conflict with

those of foreign powers and may not be obtainable by peaceful methods, it is the responsibility of military leaders to determine the means required to carry them out, should force be required. It is clear, therefore, that a close co-ordination between the various Presidential advisers is essential to a sane and healthy policy. The State Department should not be unmindful of the serious task the armed forces will have in carrying out a policy that may be correct in theory or popular in appeal but extremely perilous in execution. The military forces, for their part, must be prepared to understand the ramifications of the policy recommended by the State Department, so that they may judge the policy on something more than the basis of whether it is difficult to carry out. The point is that a President, to make sound decisions on United States policy, must have, in his group of advisers, individuals able to understand the numerous factors which influence a given problem, and, at the same time, an appreciation of each other's position in the matter. Capable advisers must bring to the task a broad understanding and not merely the narrow viewpoint of how a particular policy affects their peculiar position.

It is valuable to consider, even briefly, how the United States military and foreign policy developed in the past, and its relationship to present difficulties.

Historical Background

The United States gained its independence by war: the colonists resorted to force when the conditions imposed upon them became unbearable. The conflict was fought under a confederation without a strong executive head. The dominant personality, throughout the struggle, was the man who led the armies, who later presided at the convention which formulated the Constitution, and who became the first President of the United States. He was a man unique, not only in American history but in the history of the world. George Washington was a balanced individual of extraordinary strength of character and one experienced in the basic things of life and in government. To a profound knowledge of military affairs, learned in the hard school of war, he combined an understanding of diplomacy gained from dealings with allies. Before relinquishing his command, General Washington laid before Congress his ideas of a peacetime military establishment which, later, was the basis of his military policy. The essentials of his recommendations were as follows:

> A Peace Establishment for the United States of America may in my opinion be classed under four different heads viz:
>
> First: A regular and standing force, for Garrisoning West Point & such other posts upon our Northern, Western, and Southern Frontiers, as shall be deemed necessary to awe the Indians, protect our Trade, prevent the encroachment of our Neighbours of Canada and the Florida's and guard us at least from surprises; Also for security of our Magazines.
>
> Secondly: A well organized Militia; upon a Plan that will prevade all the States, and introduce similarity in their Establishment, Maneuvres, Exercise and Arms.
>
> Thirdly: Establishing Arsenals of all kinds of Military Stores.
>
> Fourthly: Academies, one or more for the Instruction of the Art Military; particularly those Branches of it which respect Engineering and Artillery, which are highly essential, and the knowledge of which is most difficult to obtain. Also Manufactories of some kinds of Military Stores.

Our military and foreign policies represent the two sides of the same coin. It is clear, therefore, that a close co-ordination between the various Presidential advisers is necessary for a sane and healthy policy

As President, Washington drew upon

his vast experience and knowledge in guiding the new nation through its formative years. In doing so, he was fully aware of the enormous handicaps under which he had fought to achieve independence. He was certainly cognizant of the numerous mobilizations and demobilizations; of the rise in the strength of the American Army during the long conflict from about 7,600 in 1775 to a maximum of 89,600 in 1776; and its fall from about 30,000 at the time of the Battle of Yorktown to the low total of 665 in 1784. He knew better than anyone else how near the Colonies came to losing their fight. He also must have known that final victory was achieved only with the assistance of French allies and their fleet. Reflections on war and peace, made during his administration, show clearly enough that Washington understood Clausewitz's principle long before it was enunciated, as is indicated by the following:

> If we remain one people, under an efficient government, the period is not far off when we may defy material injury from external annoyance; when we may take such an attitude as will cause the neutrality we may at any time resolve upon to be scrupulously respected; when belligerent nations, under the impossibility of making acquisitions upon us, will not lightly hazard giving us provocation; when we may choose peace or war, as our interest guided by justice, shall counsel.
>
> . . . Taking care always to keep ourselves, by suitable establishments, in a respectable defensive posture, we may safely trust to temporary alliances for extraordinary emergencies.

Washington's sound understanding of the role of the armed forces in diplomacy is exemplified in the following quotations:

> There is a rank due the United States among nations, which will be withheld if not absolutely lost, by the reputation for weakness.
>
> To be prepared for war is one of the most effectual means of preserving peace.

His knowledge of war and peace led him to recommend a natural balance between foreign and military policy. The military policy which he advocated was the one he proposed upon laying down his command. Essentially, he advocated a small regular military establishment, backed up by a uniformly organized, equipped, and trained militia, which embraced the idea of universal service, and the creation of an adequate Navy. Washington's ideas on national defense were strongly influenced by the Swiss system with which he was thoroughly familiar. Unfortunately, however, President Washington was never able to secure the adoption of his military policy for the United States, though for many years the basic aspects of his foreign policy remained in effect.

After Washington

When President Washington passed from the national scene, his ideas of a proper military policy went with him. None of his successors in office revived the plan. In time, it even passed from the notice of military students, to be rediscovered by one of the most discerning of them, Brigadier General John McCauley Palmer. The foreign policy, which the distinguished diplomatist Thomas Jefferson had helped to develop, fared much better and continued in force, with important modifications, until it was temporarily abandoned during World War I, and then, after a brief revival, was definitely dropped during World War II. The most important additions to Washington's foreign policy during the time it was in force include the Monroe Doctrine, the Open-Door Policy, and the more nebulous one of concerning ourselves in the affairs of other countries—a policy contrary to the publicly announced one of the Government. These new additions to the policy were beyond the physical capabilities of the United States, but a superficial examination of the writings of the various Presidents concerned fails to show that any of them thought so. Neither did the expanding frontiers cause any great concern about the military strength of the United States. In other words, neither

foreign commitments nor physical growth had any essential effect upon the armed might of the United States. Instead, a balance of power between possible enemies, coupled with an advantageous geographical situation, always favored the popular policy of military weakness, as in President Washington's time.

The years of military weakness were not lacking in wars. In fact, the military impotence of the United States probably contributed to the causes of most of them. Each of the wars, except the Civil War, was preceded by a period of mounting tension abroad, made worse by the activities of war-minded individuals at home. The period before 1861 also was marked by rising tension in the United States which indicated that war probably would follow. In no case was there a material increase in the armed might of the Nation, nor did the termination of hostilities in any of our wars lead to any material improvement in the long-range military power of the Nation. There was always a return to weakness, and no strong voice was lifted in opposition to the popular demand. The tendency always has been to blame the people. This would be justified only if the leaders had advised another course. The following brief analysis of the rise and fall in the strength of the armed forces, as shown by evidence drawn from the Army alone, will be illuminating to many.

Armed Strength Variations *Prior to the Civil War*

In the troubled period before the declaration of war in 1812, the Army was increased by only about 5,000, making a total of 15,000, to protect a country against an enemy with a common frontier and a predominant fleet which could threaten the extensive coast line at any point. The Army's strength jumped to more than 25,000 by 1814, and then dropped to about 10,000 by 1815.

As should have been foreseen, the Louisiana Purchase brought on tension first with Spain, then with Mexico, and finally with frontier Indians. These tensions rose steadily from 1828 and resulted in breaking off relations with Mexico, when the United States recognized the independence of Texas in 1837, and ultimately led to war. During this period, the Army remained at about the same strength. In fact, it had decreased to about 8,000, in 1846, at the outbreak of the war. It was then expanded to reach a total of about 47,000, in 1848, at the termination of the conflict, but dropped to 10,000 in less than a year, even though United States territory had been expanded enormously by the acquisition of Texas, New Mexico, and California, and the Nation had thus definitely become a Pacific power. So far as has been determined, not one of the Presidents who served in the period of the early westward expansion and the resultant rise of tension with Mexico recommended any material increase of forces to back our foreign policy.

Civil War Period

Following the Mexican War, sectional differences, which had already shown their ugly heads, even in matters of foreign policy, became progressively more violent, clearly indicating that a resort to arms was possible if not probable. Political and military advisers of the period seldom were able to rise above their sectional interests. Yet, little or nothing was done before the actual outbreak of hostilities to strengthen the military forces of the United States. President Lincoln inherited a rebellion and an Army of approximately 16,000. Before peace was restored, he had resorted to a draft and had expanded the Army to more than a million men. This force then dropped to about 50,000 by mid-1868. By that time, Alaska had been acquired, adding enormously to the national territory, and the Western Indians had

demonstrated an uncompromising attitude toward the western expansion which was being accelerated by economic conditions prevailing in the rest of the country. Not only were the forces demobilized, but the lessons they had learned in combat were not reduced to writing for the benefit of succeeding generations. Thus, the military art, which the excellent armies of the North and the South had developed in 4 years of hard battle, was lost, in large measure, to future generations of the Republic.

Post Civil War Period

In the years following the Civil War, the problems arising out of new frontiers, trade, and intercourse with other parts of the world were of outstanding importance. The Monroe Doctrine and nonentanglement in European affairs continued to be the guiding foreign policies. At the same time, the military policy of the United States languished. There was some increase in the Navy, but this was not adequate to the defense of the sea frontier on the two sides of the undivided continent. Tension with Spain was growing and ultimately led to war. At the beginning of that struggle, the Army amounted to little more than 28,000. It rose quickly to nearly 280,000 by August 1898, but declined to slightly more than 79,000 by April 1899, being held at this "high" figure because of occupational duties in Cuba, Puerto Rico, and the Philippine Islands, and by the Philippine Insurrection. Out of this war came enormously increased responsibilities due to the expansion of territory to far distant regions as well as in others near by. The United States had, at last, broken out of its continental base, and had become a positive force in Asiatic affairs, a fact which entailed enormous, new, and unrealized responsibilities. There is nothing to indicate that any of the Presidents during the rising tension with Spain fully appreciated the relationship between foreign and military affairs.

Period Prior to World War I

President Theodore Roosevelt came into office when President McKinley was assassinated shortly after the conclusion of the Spanish-American War. He is unique among all the successors of Washington in his philosophy concerning peace and war. As a student of military affairs and particularly of Captain Alfred Mahan's ideas of strategy, he saw very clearly the significance of naval power. His interests in naval matters influenced greatly his policies concerning the Panama Canal, the eventual completion of which had the effect of strengthening our naval forces by making it possible to shift them quickly from the Atlantic to the Pacific or the reverse. At the same time, he urged and secured the expansion and modernization of the fleet and was able to prevent the complete reduction of the United States Army to the insignificant force that had existed prior to the Spanish-American War. He also instituted many reforms for the internal improvement of the Army. He did, however, adhere to the expansible Regular Army principle as the basis of our land power rather than to Washington's theory. Certain men, notably General Emory Upton and Secretary of War Elihu Root, probably influenced Roosevelt in these matters. By his acts, such as sending the fleet around the world, he demonstrated an understanding of the role of force in international affairs. While strictly adhering to the principles of the Monroe Doctrine and nonentanglement, he probably nurtured ideas of greater participation in world affairs. He also had a tendency to talk stronger than our military situation justified at the time.

While the United States was slowly consolidating its position, expanding its fleet, building the Panama Canal, and training its eyes upon a weak and impoverished Army, militarism was growing by leaps and bounds in Europe and Japan. Great alliances were being created and

tension was in the air. All of this suddenly ended in the crisis of 1914 and a world war. President Wilson came into office only shortly before this world-shattering event and was destined to become a war President.

World War I

Wilson was a theorist and lacked experience in both foreign and military affairs. A cleverly directed but false foreign propaganda played successfully upon the American people and created a war party. Wilson's peaceful leanings inclined him to true neutrality, but his whole political philosophy and background made him desire the defeat of the Germans. This is illustrated by his correspondence with Ambassador Walter H. Page in London. In any event, he did not object to some increase in the Navy, and a lesser one in the Army. He made no real use of the General Staff to prepare for the possibility of war. He inherited an Army of about 90,000 which, in spite of the punitive expedition to Mexico, had grown to only 200,000 when war was declared. A precipitate mobilization followed. By mid-1918, more than 4,000,000 men were in the United States Army, and the Navy had expanded greatly. The Army had dropped to approximately 225,000 by the time he left office. By participating in World War I, the United States abandoned the policy of nonentanglement in European affairs. Wilson's dream for world security was a League of Nations and an alliance with Great Britain and France. He was astute enough, however, to realize that the United States should have greater armed forces. He proposed a larger standing Army—the policy of an expansible Regular Army for future emergencies.

World War II

An analysis of later administrations will not be made for most informed officers are quite familiar with them. It is enough to note that the United States, lacking balance in foreign and military policy during the hectic years of emergency that preceded World War II and sound strategical direction leading to definite political objectives, emerged from the war with a plan for a rapid demobilization. This was put into effect before conditions conducive to its future security had been established. Through these failures, the last semblance of balance of power in both the East and the West was destroyed. The United States, having dismantled its military establishment, entrusted its future security to an untried United Nations without police powers.

Before World War I, thanks to a balance of power existing abroad and to a favorable geographical position, the United States could base its military policy upon friendship with Great Britain and upon naval power and a small Regular Army, to be enlarged by an army of citizen soldiers when war became imminent. It could, with good reason, count upon throwing its strength to friends with decisive effect. However, having participated in the destruction of the balance of power in Europe and in the Far East, and having lost some of the advantages of a favorable geographical position because of the ever increasing range of submarines and airplanes, the United States now finds itself in the front ranks, while other powers await its decision and actions before determining their own. These other powers may or may not be capable of determining final victory. Geographically, they are dangerously close to the aggressor who is one of the few remaining great powers. They cannot be expected to adopt idealism as a policy, but, on the contrary, may be counted upon to act realistically and in their own interests. Any satisfactory balance between the military and foreign policy of the United States should take these fundamental facts into consideration.

Conclusions

To summarize, it might be appropriate

to paraphrase and apply to our own situation a statement concerning Hitler made by German Field Marshal von Kleist from a prison cell: *Most American presidents have mistakenly believed that military success would solve political problems. Indeed, under their leadership, the United States has tended to reverse Clausewitz's dictum and to regard peace as a continuation of war by other means.*

It is the duty of military men to act as advisers to the President or Commander in Chief in matters of military policy. It is the duty of foreign service officers to advise him on matters of foreign policy. Before the unification of the armed forces, the Commander in Chief had the advice of both the Army and Navy. Since that time, he has had the assistance of the Joint Chiefs of Staff, whose spokesman is its Chairman. In foreign policy, he is advised by the Secretary of State, who has the assistance of career personnel. However, no professional man in the State Department can speak in his own sphere with the same authority as the Chairman of the Joint Chiefs of Staff should speak on military matters. Recent administrative changes have resulted only in co-ordinating and narrowing military advice. They have not altered in any way the President's responsibility for the actual formulation, coordination, and execution of foreign and military policy.

In fairness to the Commanders in Chief, it is to be noted that their training is left to chance in the United States. No one is ever certain that he will achieve the position of President and, therefore, no one can plan his own education for the task. On the other hand, the training of career military and foreign service officers is not left to chance. From the time they are commissioned, they are afforded every opportunity for study and self improvement, and many of them eventually are brought together at the peak of their formal education at the National War College. There is a tendency, however, for these officers to consider their education completed in the service schools and colleges. Such should not be the case if our future Presidents are to have the most capable assistants, without which they cannot meet adequately the tremendous responsibilities that devolve upon them in this modern, rapidly changing world. In this connection, it is well to consider the words of Mahan and the admonition given by him in a less hectic period of our history:

> The often failure of conjoint military and naval operations has been due less to mean jealously than a lack of such mutual understanding; and for a due grasp of preparation for war, and for planning war, military men of both services need to be imbued with knowledge of international relations. Those relations do affect the amount of force available in various quarters, by the several opponents. Thus Darrieus says correctly: "Every naval project which takes account neither of the foreign relations of a great nation, nor of the material limit fixed by its resources, rests upon a weak and unstable base. Foreign policy and strategy are bound together by an indestructible link." . . .
>
> My last word to you . . . is to master and keep track of the great current events in history contemporary with yourself, appreciate their meaning. Your own profession, on its military side, calls of course for your first and closest attention; but you all will have time enough to read military history, appreciating its teachings, and you can also keep abreast of international relations, to such an extent that when you reach positions of prime responsibility, your glance—your *coup d'oeil*, to repeat the French Idiom—will quickly take in the whole picture of your country's interests in every emergency, whether that be pressing or remote . . . aim to be yourselves statesmen as well as seamen. . . .

It is not enough, however, that the soldier-statesman be proficient in the military profession and skilled in international relations unless these qualifications are interpreted to include a sound understanding of political and economic geography, of demographic factors, of the implications of scientific and technological developments, and of history from which, as De Vattel has clearly demonstrated in his great work *The Law of Nations*, is learned the natural laws that should govern na-

tional policy alike in peace and war. Through the study of history, the soldier-statesman will bring to his work the experience of others. He will know that among nations there is no sense of gratitude for past favors—each may be expected to act in its own interests in any given situation—and, like Lord Chesterfield, he will also know that: "There is not a more prudent maxim than to live with one's enemies as if they may one day become one's friends; as it commonly happens, sooner or later, in the vicissitudes of political affairs."

Mahan quotes Lord Nelson as having said, "An officer should have political courage," and then adds, "Political courage to be well based requires political knowledge as well." He could have gone further and shown that an officer placed in a pre-eminent position should have the force to make his views known before policies are adopted, and the strength of character to place his country's good before his own when dealing with elected superiors. It is the duty of a military man to step down when his considered opinion is set aside by political superiors. To defer to superiors on the ground of civilian control is only base flattery unworthy of a soldier.

Finally, it may be stated as an axiom that when a firm and wise President or Commander in Chief heads the Government and is surrounded by military and foreign policy advisers of great strength of character who are trained in their specialties and strengthened by knowledge gained from a study of history and from practical experience, the Nation's interests will be best served.

Our foreign policy is a world policy, a policy of world peace—peace not only in the Western Hemisphere, but in Europe, in Asia—all around the globe.

President Harry S. Truman

There is a vast difference between being a staff officer and being a commander. The staff officer is never totally responsible—the commander always is.

General J. Lawton Collins

Ground Support by the Antiaircraft Artillery

Lieutenant Colonel Joseph D. Iseman, *Artillery*
Instructor, Command and General Staff College

IN THE invasion of Normandy, on Omaha Beach, self-propelled antiaircraft artillery automatic weapons were to land at H plus 2 to provide antiaircraft protection for the beach and beach exits. At the end of H plus 1, the infantry was not the 2 miles inland as was planned, for it was still lying on the beach unable to advance because air force bombing and naval gunfire had not neutralized the German beach defenses. In addition, an unexpected German infantry division was encountered defending the beach. The self-propelled units afloat were landed ahead of schedule to give additional fire support in the attack against pillboxes and machine-gun positions along the beach. With this added support, the deadlock on the beach was broken and the infantry moved inland. This was probably the first time that the tremendous fire power of antiaircraft artillery automatic weapons units was brought forcibly to the attention of higher commanders. General Bradley went so far as to say, "If it had not been for the gallant efforts of the antiaircraft artillery on the beach on D-day, Omaha Beach may have been lost."

This example serves to highlight once again the truism that every commander must know the capabilities and limitations of the units in his command. Yet, since the matériel of the antiaircraft artillery automatic weapons battalions is designed primarily for air defense missions, their capabilities and limitations in the ground-support role are not fully realized. Consequently, an examination of this important aspect of the antiaircraft artillery automatic weapons battalion should serve to show these characteristics both in clearer relief and in better over-all perspective.

On the favorable side, it can be stated that antiaircraft artillery automatic weapons are extremely accurate and can deliver a large volume of fire destructive to personnel at a point or over an area. They possess a high degree of battlefield mobility, and are capable of supporting the infantry in practically all types of ground combat operations.

The disadvantages of the weapon, while significant, do not outweigh the advantages. These disadvantages include flat trajectory fire, the high silhouette of the carriage, a large amount of muzzle blast, a lack of protection for the crew, excessive noise during movement, and dead space over the cab of the *M16*, the mount for the quadruple .50-caliber machine guns. Because of these limitations, antiaircraft artillery in the ground-support role will not provide the cure for all evils. However, the assistance which it can render is worthy of study and consideration.

From the viewpoint of communications, the antiaircraft artillery automatic weap-

ons battalion is readily adaptable to provide ground support. This facility permits its rapid integration with the other arms of the division and provides the flexibility required to meet the emergencies of ground combat.

In view of their adaptability, a balance should be struck between the employment of these weapons in air defense and their use in conjunction with other units of the division in a ground-support role. Whenever practicable, consideration should be given to siting the weapons so that they can perform both missions. *The primary role will be determined by the urgency of the situation at the time.* The decision to divert antiaircraft artillery to the ground-support role must be made by the commander.

General

The division commander, in employing the full capabilities of his antiaircraft artillery automatic weapons battalion and any supporting 90-mm guns, must be aware of the peculiar effects on these weapons of those dominant factors of the battlefield—the terrain, the weather, our own resources, and enemy capabilities.

Terrain will have a decided effect on the use of both the smaller caliber weapons and the 90-mm guns. Extremely rugged terrain will restrict their maneuverability by requiring them to stay on or near roads or other good routes of communication. Hills will restrict their fires since they are relatively flat trajectory weapons and hardly capable of placing fire on reverse slopes or other defiladed areas.

The effect of weather on antiaircraft artillery employed in the ground-support role is similar to that of other arms. However, extremely adverse weather conditions will limit enemy air operations and, therefore, permit greater use of the antiaircraft artillery in close support of ground operations.

The exigencies of combat, often resulting in overrun positions and depleted units, frequently demand the diversion of the antiair effort to restore the shock effect of fire power.

In addition, in numerous instances in North Africa and in Europe, as well as currently in Korea, 90-mm gun units supporting the infantry division have been employed as field artillery. A reduction in ammunition allocations of the standard field artillery calibers may result in an increased demand for ground-support missions by antiaircraft artillery gun units.

The principal factor which normally has the greatest implications is enemy capabilities—both in the air and on the ground. The enemy's air effort must be evaluated carefully. If it is apparent that his air potentialities are strong enough to keep the division from accomplishing its mission, it follows that the antiaircraft guns and automatic weapons must be employed in an air-defense role. As the threat of enemy air decreases, or ceases to exist, the commander should consider the employment of these weapons on other missions. Their best possible use in a ground-support role will be controlled largely by the enemy's ground capabilities.

In determining the best service that antiaircraft artillery automatic weapons and guns supporting other elements of the division can perform, it may be well to consider the infantry division in its tactical role in normal offensive operations, a river

All commanders must know and appreciate the capabilities and limitations of AAA AW battalions in both offensive and defensive missions in order to derive the maximum effect from their inherent fire power

crossing, the defense of a river line, retrograde movements, and the attack of a fortified position, all in the light of the enemy capabilities of infantry, armored, and airborne attacks; and then show the tactical employment of the antiaircraft artillery automatic weapons in each of these operations. Further, consideration will be given to the tactical employment of these weapons in antiguerrilla operations.

Offense

The infantry division in the offense is characterized by fire power, maneuverability, and shock action, co-ordinated and concentrated to bring about the capture of objectives which accomplish or threaten the destruction of the enemy. Troops are distributed in two or more principal tactical groupings. One group, in which the greatest possible offensive power is concentrated, has the mission of launching one or more main attacks to bring about a decision. The other group has the mission of carrying out one or more secondary attacks so as to render maximum assistance to the main effort. Main attacks are characterized by narrow zones of action, *strong support by the artillery, armor, and other supporting weapons*, effective support by available combat aviation, and the deep echelonment of reserves.

Consider a situation in which an infantry division, part of corps, has the mission of seizing the city of C. (See Figure 2.) The division commander has decided to use two regiments in the assault with the third regiment and the tank battalion in reserve. There are no unusual aspects of terrain or weather. The division has no appreciable shortages in men, equipment, or supplies. Enemy air is negligible. The division has sufficient combat superiority to warrant an attack.

The principal effort will be made by the regiment on the south. Let us explore and develop the implications of various enemy capabilities as they affect the employment of the automatic weapons battalion.

An enemy capability of an *infantry attack* develops nothing peculiar. To derive maximum benefit from the fire power of the automatic weapons, they can be used best when operating closely with the assaulting infantry. A preponderance of the available weapons should be used to weight the main effort. It would be desirable and almost mandatory to attach the automatic weapons battalion to the infantry unit with which it is to operate. This would provide for unity of command and is in line with the fundamental concept of giving the subordinate commander a mission and then providing him with the means with which to bring the operation to a successful conclusion. As a basic guide, a desirable allocation is one antiaircraft artillery battery for each infantry regiment, with modifications demanded by the situation. The regiment probably would attach a platoon of the battery to each of its two front-line battalions, although the battery could be employed as a unit in general support.

The enemy capability of an *armored attack* will require co-ordination between the employment of the antiaircraft artillery automatic weapons and the antitank defense plan. The antiaircraft artillery automatic weapons, generally speaking, are not effective antitank guns except when used against very lightly armored vehicles and tanks. They are most effective for supplementing antitank measures by destroying the enemy infantry accompanying tanks.

One technique which has developed from the fighting in Korea is the use of antiaircraft artillery automatic weapons in conjunction with friendly tanks. As soon as an enemy tank is sighted, the automatic weapons immediately cover it with a heavy volume of fire. The enemy tank then is forced to "button up." The fire of the automatic weapons may also destroy some of the sighting equipment of the tanks. This seriously hampers the ability of the

enemy tank crew to observe or adjust its fire. As a result, defending tanks have a better opportunity to destroy the enemy's armor. Experience has indicated that tank fire has been extremely successful when used in this manner. This technique can be exploited further by having the automatic weapons work closely with the tanks of the tank company of the infantry regiment. However, these tactics must be viewed with extreme caution and will be directly related to the tank tactics of the enemy at hand. In the Korean example cited, success was achieved because of the fact that the enemy had only a small amount of armor and employed single tanks in many instances. Where the enemy employs tanks in mass, such tactics are suicidal for automatic weapons crews. They would fall easy prey to enemy armor in defilade covering the enemy's deployed tanks since our crews are not protected by overhead cover and the side armor is thin.

Supporting 90-mm antiaircraft artillery guns can be employed in ground-support roles because of their characteristics of high muzzle velocity, flat trajectory, and the ability to perform as conventional field artillery. They, therefore, can be employed effectively against infantry or armor. However, some conflict may arise in performing this dual role concurrently, since the 90-mm guns, if sited along avenues of approach for enemy armor, may not be able to employ their fires by battery against infantry. To the extent practicable then, 90-mm guns are located to perform both infantry support and antitank missions. If this is not feasible, then they must be sited to perform best the most important mission at the time.

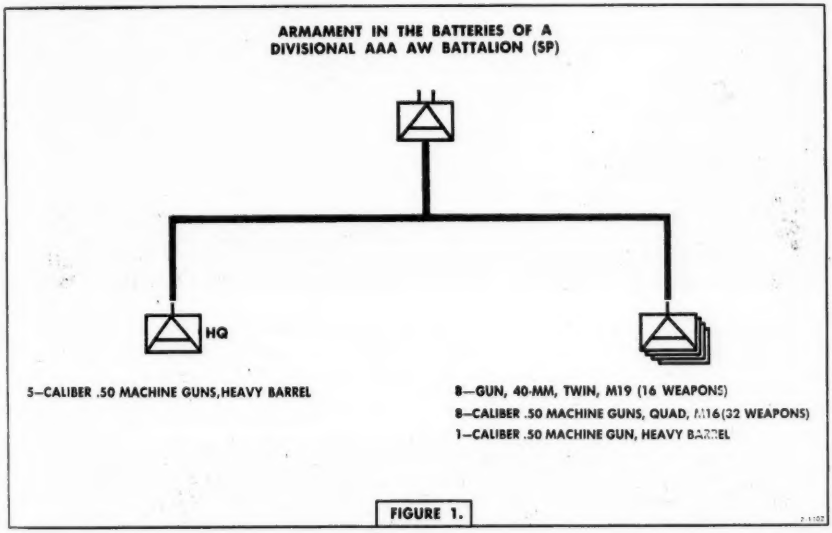
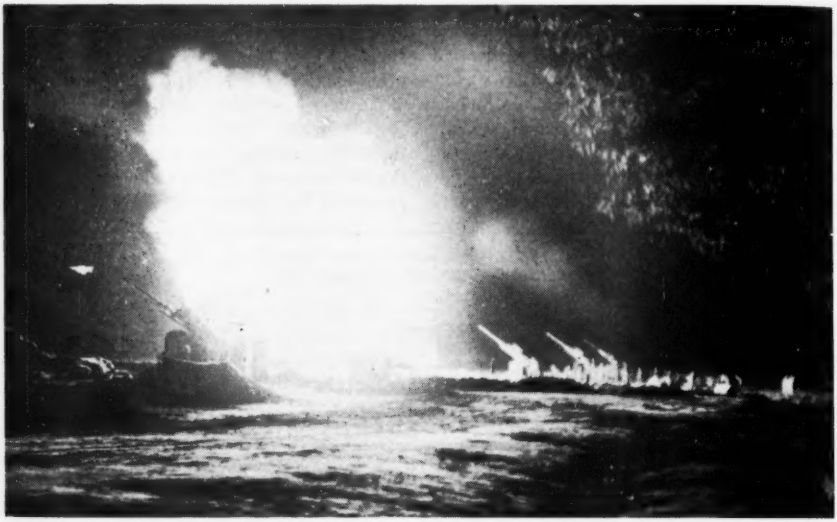
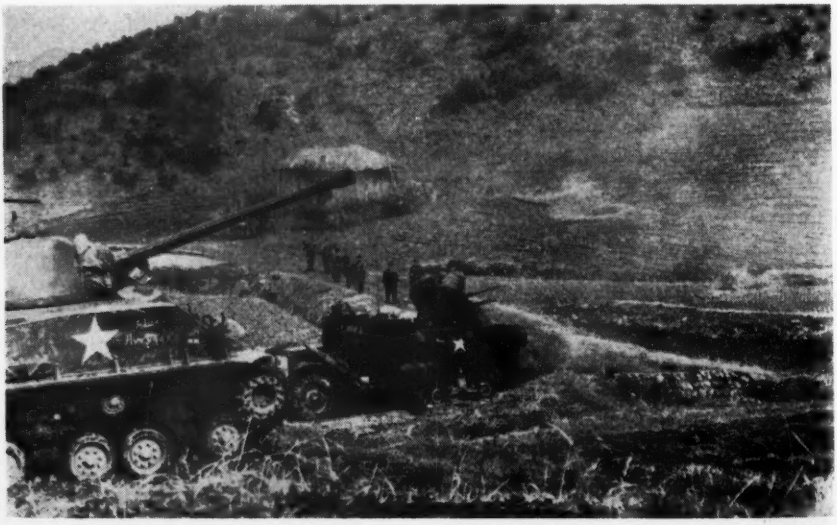


FIGURE 1.

If the enemy has a capability for *airborne attacks*, the ground employment of antiaircraft artillery automatic weapons shifts from the support of attacks to the front to the security of the flanks and the rear areas. The automatic weapons are ideally suited for this type of action. Initially, they can engage the enemy aircraft prior to the drop. If properly sited, they can place heavy, accurate fire on enemy



Antiaircraft artillery, particularly during the Korean fighting, has demonstrated its value in ground-support missions. Above, 90-mm guns taking enemy ground targets under fire during night operations in Korea. Below, an AAA AW *M16* gun crew, with tanks, blasting an enemy-held hill prior to an infantry attack.—*Antiaircraft Journal* photos.



personnel during the period of the drop, immediately after landing, and during their reorganization. This is the period of time during which airborne troops are most vulnerable to attack. This enemy capability most likely will be coupled with his ability to attain, at least, local air superiority. Consequently, a situation of this type appears to present the best opportunity for initially siting antiaircraft artillery weapons for dual employment. By careful consideration, they can be emplaced to cover drop and landing zones and still be in position to destroy enemy aircraft, both tactical and troop carrier. Subsequently, they can be used with the mobile reserve against ground action by enemy airborne forces. To co-ordinate this effort properly throughout the division area a high degree of control is required. Centralized control is best attained by placing the antiaircraft artillery under the control of the division artillery commander.

In one general respect the ground employment of antiaircraft artillery automatic weapons in the offense and in more specialized ground operations is similar: in each case, the use of antiaircraft artillery automatic weapons must be based on the actions of the infantry units. As the infantry units must apply special techniques to specialized operations, so must the antiaircraft artillery develop and apply special techniques to provide the necessary close support. These special techniques, therefore, are developed and discussed below.

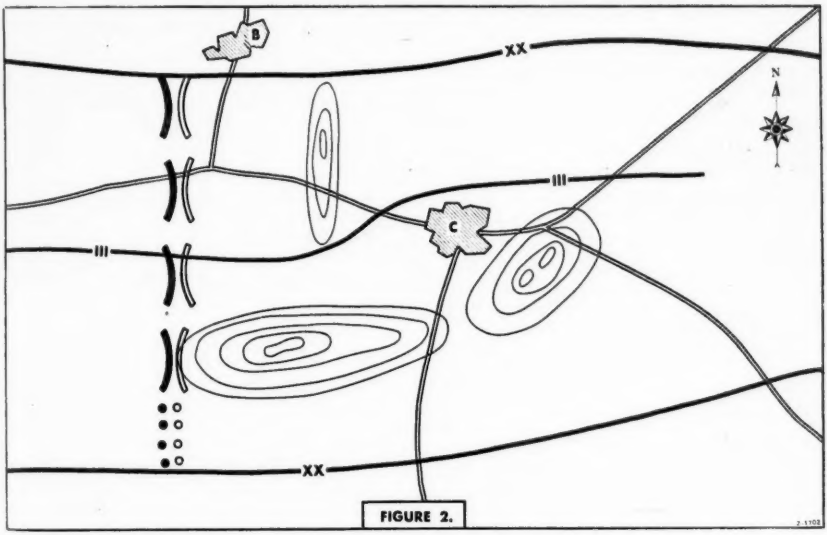


FIGURE 2.

River Crossing

In an advance across a strongly defended river line, the tactical plan should envisage an early crossing of the antiaircraft artillery automatic weapons units to the other side of the river. There they can help neutralize the defending hill masses and the reserve positions. In this type of operation, the bulk of the automatic weapons should be attached to the assaulting infantry elements. Since the river obstacle affords a relatively high degree of security against large infiltrating groups, only a small proportion of the an-

tiaircraft artillery automatic weapons are required for the protection of rear installations and lines of communications.

In a hasty river crossing, antiaircraft artillery automatic weapons, with their high rate of fire, can best be employed to neutralize the far bank while the infantry makes a rapid crossing against weakly defended enemy positions.

Defense of a River Line

A defense established behind an obstacle such as a river requires careful consideration of the enemy's capabilities and the terrain before a distribution of the antiaircraft artillery automatic weapons is effected. The enemy's capabilities must be weighed carefully not only in the light of what he is capable of accomplishing, but also in light of the tactics normally employed by him. Thus, while a river in the past has been accepted as providing a reasonable amount of security if it is unfordable, a future enemy may not consider it as such. If a study of the enemy's tactics indicates a tendency to infiltrate large units across what seem to be impassable terrain barriers—which characterized Japanese operations—the commander must be prepared to evaluate the relative importance of placing the additional fire support provided by the automatic weapons on the river line to deter such infiltration against the necessity of guarding rear installations and command and communications facilities. It appears that no general rule can be established for such a situation, and that it can be resolved only by a careful consideration of the conditions at hand. As a guide, however, the fire power of the automatic weapons should be divided among the regiments guarding the river line, the major combat units he'd in mobile reserve, and, as required, the rear area security elements.

Retrograde Movements

Present concepts visualize that in retrograde movements, detachments strong in armor, engineers, and field artillery will be used as rear guards to delay, disorganize, and deceive the enemy, causing him to deploy his forces as frequently as possible. These detachments require, and can use to maximum advantage, the additional fire power of the antiaircraft artillery automatic weapons, for these weapons are valuable in covering road blocks, mine fields, and other obstacles which may be set up to impede the progress of the pursuing enemy. In this type of situation, it is mandatory that the antiaircraft artillery automatic weapons units be attached to the units composing the rear guard and flank security elements.

Attack of a Fortified Position

An accepted premise in an attack on a fortified position is that the entire fortified line cannot be overcome simultaneously. It, therefore, follows that a breach will be made in the line, allowing troops to progress through the hard crust of fortifications. By widening the gap and rolling up the flanks, maneuver room is gained in the rear of the enemy defenses for further exploitation and consolidation. A question arises as to what assistance the automatic weapons can provide in such an operation. Antiaircraft artillery automatic weapons primarily are not designed for missions requiring penetrative blast, hence they are of little value in destroying heavily fortified installations. However, since they are accurate and capable of placing a large volume of fire on a given point within a short period of time, they are particularly suitable for neutralizing enemy installations by firing at the gun apertures and sighting devices of enemy pillboxes, as well as on enemy personnel interfering with our engineer demolition activities. The automatic weapons, therefore, can best be employed in this type of operation by attaching them to the units which are given the mission of making the initial opening in the enemy defensive

line. For the other phases of the penetration—the roll up of the flanks and the exploitation—the close support provided by antiaircraft artillery automatic weapons is similar to that provided in the offense. The antiaircraft artillery 90-mm guns, however—with armor-piercing ammunition—can be used effectively against some types of fortifications, as well as provide antitank and infantry support in this form of operation.

An antiaircraft artillery gun crew, participating in a ground-support role, blasting away at an enemy-held ridge line north of Umyong-ni, Korea.—*Antiaircraft Journal* photo.

Antiguerrilla Operations

Until the outbreak of hostilities in Korea, defense against extensive, aggressive guerrilla operations had been experienced by relatively few of our military forces. These circumstances resulted from the fact that most of the countries in which we fought in World War II were populated by friendly people. As a result, we enjoyed the luxury of having lines of communications and rear areas which were comparatively secure from organized enemy action. In any future conflict, however, we must expect and be prepared for guerrilla warfare.

It is conceivable that in future operations, the threat and possible success of enemy guerrilla operations will force our field commanders to divert some of their front-line divisions to protect lines of communications and rear area installations. The battlefield may be anywhere or everywhere. To cope with these forces we will require units strong in fire power and mobility, and capable of setting up and defending small, critical areas. These critical areas may be bridges, power plants, water works, pipe-line terminals, or other essential installations which are prime targets for guerrillas.

The unit commander who has been attached to the communications zone to provide the rear area defense against guerrilla attacks must plan, based on the specific situation, to locate his forces close enough to the affected areas to ensure timely action and, at the same time, provide for a mobile reserve, all under his

centralized control to ensure proper flexibility. Where the guerrilla forces are reasonably well organized, he must plan to isolate them, cut off their logistic support, and then defeat them.

In addition, plans must be made to protect motor convoys, to obtain railroad train escorts, and to provide all or part of the local security for headquarters and supply and maintenance installations. The antiaircraft artillery automatic weapons are particularly suitable for the protection of motor convoys and rail movements. A typical organization to provide protection for a motor convoy is shown in Figure 3.

In this formation, the holding elements of the security detachment are distributed throughout the convoy to provide close-in defense. The attacking elements follow the convoy with the mission of enveloping any ambushing guerrilla force while the holding elements maintain a continuous base of fire to hold the enemy in place. It is extremely desirable to supplement the security detachment with some of the weapons of the automatic weapons battalion. The tremendous fire power they can develop will be of material assistance in keeping the enemy in place until the attacking elements can survey the situation and maneuver to bring about the destruction of the hostile force.

Railroad train protection envisages the employment of a security detachment of infantrymen riding with each train. It is evident that the fire power and effectiveness of these detachments can be increased materially by the addition of automatic weapons carriers mounted on flat cars. In this way, the security detachments are provided with effective automatic weapons support in their defense against those hostile elements which might attempt to interrupt the progress of a supply train.

For rear area security, therefore, it has been determined that in addition to normal support provided by infantry units—as well as for protection against enemy airborne forces as previously discussed—the antiaircraft artillery automatic weapons are particularly effective in the protection of motor convoys and rail movements.

Related Problems

Training

In World War II, many antiaircraft artillery units arrived in Europe trained only to function against enemy air. To avoid this limiting aspect in the future, antiaircraft artillery personnel should be given more training in ground-support roles. Improved antiaircraft artillery operations in ground-support missions will best be accomplished by establishing a program of combined training of antiaircraft artillery units with both infantry regiments and field artillery battalions.

Modification of Equipment

Magazine articles and combat reports from Korea stress changes in organization and equipment which will permit antiaircraft artillery to perform better its ground mission. Antiaircraft artillery is designed primarily for its air-defense role, but continuous thought should be given to facilitate its important ground role.

Supply

The employment of these weapons in any of the roles previously mentioned will cause an increased demand for ammunition. In addition, actions of this nature will result in a greater expenditure of vehicles and weapons. The G4 must be prepared to anticipate these needs and make proper provisions, in co-ordination with the ordnance officer, for this increased demand.

Personnel

The G1's primary responsibility for the provision of antiaircraft artillery replacements is to ascertain that they are trained properly in both the air-defense and ground-support roles. It is noted that in Korea special emphasis on air-defense

training for antiaircraft artillery units was required following a long period of engaging ground targets only. If replacements are not received trained to perform the antiaircraft artillery's dual role, the G3 must provide the requisite training in the theater.

Summary

General

1. Historically, the value of the volume and accuracy of antiaircraft artillery fire in ground-support missions has been proved in every theater of operations.

2. Every commander and general staff officer should, therefore, know and appreciate the *capabilities and limitations* of antiaircraft artillery automatic weapons and 90-mm guns in order to ensure the maximum effective employment of these weapons in ground-support roles.

3. Antiaircraft artillery guns and automatic weapons must be *sited* to perform their dual air-defense and ground-support missions to the maximum extent practicable.

4. Terrain will affect antiaircraft artillery weapons used in a ground-support role in the same manner that other flat trajectory weapons are affected by such factors as hills, observation, and obstacles.

5. Weather, by decreasing the possibility of effective air attacks, increases the opportunity for the employment of antiaircraft artillery in its ground-support role.

6. Often the precariousness of the situation, occasioned by overrun positions and depleted units, may force the antiaircraft artillery from its air-defense to its ground role in support of the infantry and in the defense against tanks.

7. If strong enough, the enemy air capability normally will take precedence over enemy ground capabilities when determining the role of antiaircraft artillery.

Offense

The discussion of the ground-support role of antiaircraft artillery has developed the following:

1. *Infantry attack.*—The automatic weapons operate closely with the assault infantry. As in any normal attack, the main effort is weighted—in this case by antiaircraft artillery automatic weapons.

2. *Attack against armor.*—Necessarily, the employment of antiaircraft artillery in the antitank role must be co-ordinated with the antitank plan. Automatic weapons destroy infantry elements accompanying the tanks, while 90-mm guns may destroy the tanks. Since the 90-mm guns also can fire normal field artillery missions, they should be sited to perform

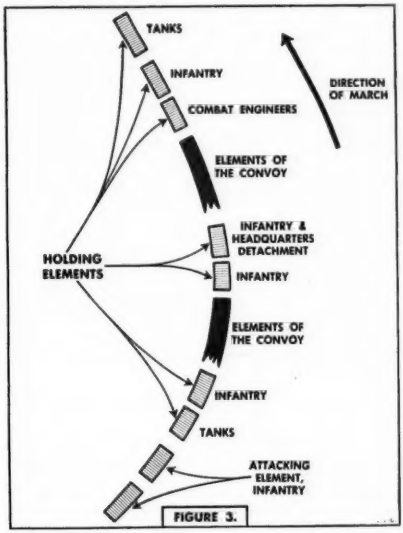


FIGURE 3.

both the antitank and infantry support roles or that mission most important at the time.

3. *Attack against airborne units.*—In event of enemy airborne attacks during our ground offense, antiaircraft artillery automatic weapons are located near the drop and landing zones to engage aircraft en route, paratroopers during the drop, and during their reorganization on the

ground. Subsequently, the automatic weapons are employed with the mobile reserve against paratroop action on the ground.

River Crossing

1. In an advance across a strongly defended river, antiaircraft artillery automatic weapons should cross comparatively early.

2. In a hasty river crossing, antiaircraft artillery may better be employed to neutralize the far bank while the infantry crosses against comparatively weaker enemy positions.

Defense of a River Line

If the enemy's tactics indicate a tendency to operate over all types of terrain to obtain surprise, then, as a guide, the fire power of the antiaircraft artillery automatic weapons is divided among the regiments defending the river line, the major combat units held in mobile reserve, and, as required, the rear area security elements.

Retrograde Movements

In this type of operation, it is desirable that the automatic weapons units be attached to the units comprising the rear guard and flank security elements.

Attack of a Fortified Position

1. Automatic weapons are particularly suitable to neutralize enemy installations by firing at gun apertures and the sighting devices of enemy pillboxes, as well as enemy personnel interfering with our engineer demolition activities.

2. For the other phases of the penetration—the roll up of the flanks and the exploitation—the close support provided by antiaircraft artillery automatic weapons is similar to that provided in the offense.

3. The 90-mm guns, however—with armor-piercing ammunition—can be used effectively against some types of fortifications, as well as providing antitank and infantry support in this type of operation.

Antiguerrilla Operations

1. Where guerrilla forces are reasonably well organized, the commander must plan to isolate them, cut off their logistic support, and then defeat them. In carrying out this plan, the antiaircraft artillery automatic weapons units provide usual close ground support. They also must look to their own local security.

2. The antiaircraft artillery automatic weapons are particularly effective in the protection of motor convoys and rail movements.

Related Problems

1. *Training.*—Improved antiaircraft artillery operations in ground-support roles will be best accomplished by combining the training of antiaircraft artillery units with infantry regiments and field artillery battalions.

2. *Modification of equipment.*—While the antiaircraft artillery is designed primarily for its air-defense role, continuous thought should be given to field modifications of its organization and equipment to facilitate its important ground role.

3. *Supply.*—Extensive employment of antiaircraft artillery in a ground role increases its expenditure of ammunition, weapons, and vehicles. Provisions must be made for the increased supply and maintenance requirements.

4. *Personnel.*—If antiaircraft artillery personnel replacements are not received already trained for both air-defense and ground support missions, the theater must initiate and provide the supplementary training as required.

Conclusions

The automatic weapons of the organic antiaircraft artillery battalion of the infantry division should be considered as an

integral part of the infantry-artillery-tank team.

Antiaircraft artillery, with its fire power, flexibility, mobility, and general availability has demonstrated that it is a tremendous asset to the ground defense in executing some of the countermeasures to infiltration and guerrilla attacks.

The discussion contained herein pertains equally as well to the employment of the antiaircraft artillery automatic weapons organic to the armored and airborne divisions.

Maximum effectiveness in their use will require additional emphasis on training designed to achieve the close support and co-ordination desired between the antiaircraft artillery and supported units.

It is incumbent on every commander and general staff officer of any division or higher echelon of command to know and appreciate the capabilities and limitations of the automatic weapons battalion in order to derive the maximum effect from its inherent fire power employed aggressively in the destruction of the enemy.

The need for improved antiaircraft weapons clearly illustrates the fallacy of the belief that Army equipment does not have the same urgent need to be kept modern as does that of the Air Force and the Navy. For as the speed of aircraft increased with the introduction of jet propulsion, for example, then the weapons to combat these faster aircraft had to improve correspondingly.

General J. Lawton Collins

The massed fire of artillery weapons sprang into greatest prominence at the beginning of World War II. It won the respect of friend and foe with its rapidity, accuracy, and relentlessness. Today, with many new developments in weapons, techniques, communication, and mobility, the artillery has enhanced its effectiveness to a degree never before realized. Guided missiles and atomic warheads will add even more to its fire power, range, and general effectiveness.

Major General A. M. Harper

The Supply Distribution Cycle

Increasing the Impetus of Supply to Oversea Commands

Lieutenant Colonel James G. Coats, *General Staff Corps*
Distribution Branch, Supply Division, Office, Assistant Chief of Staff, G4,
Department of the Army

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

The Army Plan

THE purpose of this article is to outline the Army plan for improving that part of the supply distribution system which is related to providing better logistical support to oversea commanders. We seek to effect this improvement by strengthening the control of stocks in oversea commands and by shortening the supply distribution cycle.

The Army is eager to consider, and test, if indicated, any suggestion that offers promise of aiding in the development of a more effective and more economical supply system. To that end, more than 20 surveys and projects are being conducted at the present time.

The primary objective of this improvement program is to provide the oversea theater with a more responsive supply service. However, we also expect a noteworthy advancement in economy of operation to result from the program through the reduction in amounts of supplies required to be held in oversea areas. This reduction will result from strengthening the control of stocks in those commands—specifically, by applying *all* the assets held in a theater against the requisitioning objective of the theater and by the elimination of "hoarding." The fact has been demonstrated time and again that a commander will not find it desirable to stock large reserves of all items provided that he can be sure of the rapid replenishment of emergency expenditures. This change of heart will not come with the installation of the procedures which comprise the improvement program; it will come only after confidence is felt in the ability of the improved system to respond. The Army G4 is taking vigorous staff action to ensure that the desired response is forthcoming.

The Supply Distribution Cycle

Figure 1 represents the supply distribution cycle that we wish to reduce. It is 120 days in length. It begins with the preparation of a requisition in the oversea command and ends with the delivery of the requisitioned supplies to that command.

The first 40 days of the cycle is ordering time and does not directly involve supplies in the pipe line. It is made up of 15 days in the oversea theater, spent in computing and preparing the requisition; 5 days for the mailing of the requisition to the Oversea Supply Division; 10 days for editing and processing the requisition in the Oversea Supply Division; 5 days to mail it to the Zone of Interior depots; and the first 5 days of processing time in the Zone of Interior depot. It is obvious that a time reduction in this part of the cycle

will effect an improvement in the supply service provided the oversea commander.

The last 80 days of the cycle is processing and shipping time during which a roughly corresponding number of "days of supply" are committed to, or moving in, the pipe line. A reduction in this part of the cycle will reduce the supplies in the pipe line. This part of the cycle is composed of about 30 days in the Zone of Interior depots; 10 days—rail time to the port; 10 days in the port; 18 days for the water shipment; and 12 days in the oversea port and for movement to the oversea depot.

The depot slice of the cycle is going to be reduced through this program. The balance of this, the supply-involving part of the cycle, is pretty well "fixed" until a faster means of transportation (rail or water) is developed.

The air shipment time is shown on the bottom of the figure. Using this method of transportation and emergency ordering procedures, we have placed small quantities of items with front-line troops in Korea in as little as 17 days after those items were requisitioned.

Supplies in the Pipe Line

Figure 2 gives a better idea of the quantities of supplies in transit. The first five of the days in the Zone of Interior depot slice of the cycle do not involve supplies committed to the pipe line. The balance of the depot's processing time (30 days) does represent an almost corresponding number of days of supply committed to oversea shipment. Other supplies in the pipe line include approximately 20 days on rail and at the Zone of Interior port, and about 30 days on the water and at the oversea port.

The Far East Command has a requisitioning objective for general supplies which is equal to 180 days of supply for the command. It is composed of:

1. A stockage objective equal to 60 days of supply (30 days "safety level" and 30 days "operating level").
2. An order and shipping time of 120 days (the distribution cycle).

For illustration purposes, Figure 2 pictures a time when half of the supplies held under the 30-day "operating level" have been expended, and only 15 "days of supply" remain under this level as available for issue.

The Program

To outline this discussion, the over-all program has been divided into four *major efforts* (Figure 3). One or more of those 20-odd projects, that were mentioned previously, contribute to each of these efforts.

The *first effort* forms the basis for the entire program insofar as the oversea command is concerned, for it must be completed before the *second* and *third efforts* can be developed adequately. It must be working smoothly before the major benefits of the *fourth effort*, which actually is a continuing study toward improving the procedures of the comprehensive depot stock control system, mentioned in the *first effort*, can be adopted in the depot system of the oversea command.

The Army is engaged in a stock control program to improve its supply system. Areas in which improvements can be made are in the control of stocks in oversea commands and in reducing the supply distribution cycle

Extending Our Comprehensive Stock Control System to All Oversea Depots

The Army G4 is pressing the conversion of all oversea depots to a modern system of stock control. The ultimate aim of this

action is to bring oversea assets under our Army-wide stock control system. The improved stock control system being installed is a mechanized one—this fact limits the rate of progress of installation to the time required to train personnel. Overcoming the so-called normal reluctance to change is another factor with which we must deal.

Since the stock control operation at any level of management is completely dependent on stock status and supply transaction information, a supply status reporting system has been developed to bring this information to each level of

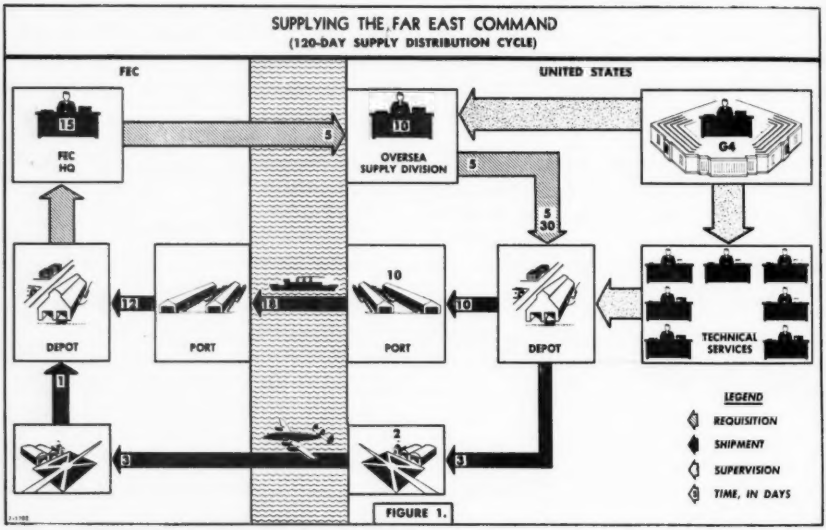


FIGURE 1.

The mechanization of supply transactions, inherent in this system, allows for the maintenance of up-to-date information on the status of depot stocks, and for accumulating "issue experience" as a by-product of the accounting job. The important point here is that the study of levels, in relation to issue experience, is made easy by bringing the information out of the accounting file and summarizing it in a form convenient for review and analysis.

We have concentrated our efforts on this project on the Far East Command since the start of the Korean operation by favoring that command, where priorities on trained personnel and equipment were concerned. This effort is nearing completion in that theater.

command charged with exercising control over depot stocks, from the depot at the end of the supply pipe line to the central stock control point in the Zone of Interior (Figure 4).

The amount of stock status information that can reasonably be required to be submitted from a depot is, of course, directly related to the adequacy of that depot's accounting system.

In Figure 5, Depot "A" data represent our ultimate goal with reference to bringing stock status and experience information into central stock control points. Our Zone of Interior depots and many of our oversea depots now are on an accounting system which facilitates the use of this

information in depot stock control operations, and permits the submission of this information to higher echelons of command for use in planning. This is the information that the Department of the Army needs to influence effectively the control of stocks in the oversea command and to plan the replenishment of those stocks.

For comparison, the Depot "C" data shown in this figure are the maximum amounts of information which we could economically bring from oversea depots while they were operating under the old stock control system. The European Command is still (except for quartermaster supplies) on this system. The major oversea commands have reached a stage in their conversion to the improved stock control system which permits the submission of more comprehensive information—that shown as Depot "B" data.

Getting our smaller oversea commands on the improved stock control system must await the completion of a test of a procedure to furnish a mechanized stock control service to small branch depots from a central accounting unit. This test is being conducted in Hawaii and will be completed at an early date.

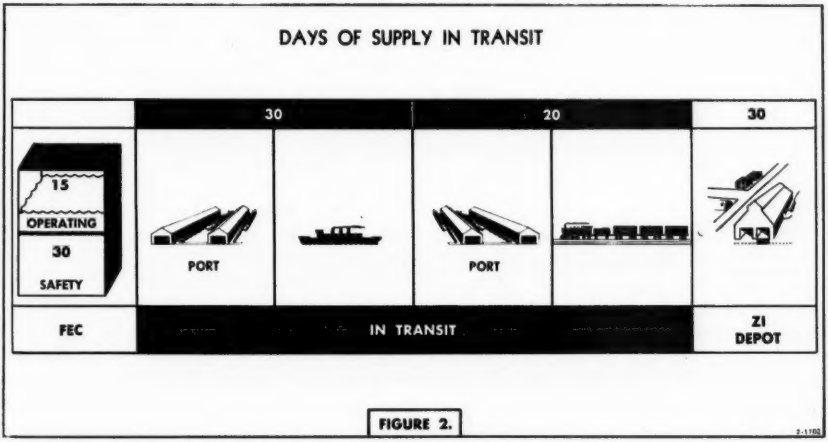


FIGURE 2.

Recapitulation

To summarize:

1. Our control of stocks in the oversea command has been strengthened by giving the oversea depot commander an improved stock control system.

2. The quantities of supplies in the oversea command have been reduced by bringing all stocks in advance section depots under the requisitioning objective. This is an important improvement in stock control; *it effects an economy in operation* and, at the same time, *it ensures a better balance of stocks* by requiring the consideration of all locally available quantities of items against their respective stockage objectives at the time each requisition is computed.

3. It is now possible for depots to submit comprehensive stock status and supply transaction information through a supply status reporting system designed to furnish all levels of command the information needed to control stocks effectively in their respective areas and to plan for the replenishment of those stocks.

4. The accomplishment of this *first effort* forms the foundation for the other three major efforts of the improvement program.

Mechanizing Procedures for Computing, Preparing, and Submitting Requisitions

As the mechanization of stock control procedures for all the depots of a technical service in the oversea command is completed, we will then change to a system of performing the initial computation of required quantities by machine methods. This procedure eliminates most of the man-hours previously required for this job.

Briefly, under the new procedure, the requisition is prepared in this manner:

The data, needed in computing the required quantity of each item, are maintained, during the normal course of accounting, on coded punched cards. These data include, for each item:

The quantity of the requisitioning objective.

The quantity on hand.

The quantity due in.

The quantity due out.

These cards are manipulated mechanically to subtract the quantities on hand and due in from the sum of the requisitioning objective and the quantity due out, the resultant figure being the quantity required. This figure then is mechanically extended to an item requisition card. Of course, required quantities computed in this manner must be reviewed by a stock control clerk to get a little more than "mechanical thinking" into the operation.

Requisitions are submitted to the Oversea Supply Divisions at the Zone of Interior ports of embarkation, together with a machine-duplicated "deck" of the punched cards used to prepare them. We are planning a procedure to accomplish a part of the Oversea Supply Division's processing with these cards. Other possible refinements include the mailing of a punched tape, in lieu of cards, and the radio transmission of requisitions.

A FOUR DIRECTIONAL EFFORT

1. Extending the comprehensive depot stock control system, developed for use in the Zone of Interior, to all oversea depots.
2. Mechanizing procedures for computing and preparing the oversea requisition.
3. Streamlining the requisition processing procedure of the Oversea Supply Division.
4. Developing uniform, improved supply transaction procedures for use in all depots.

FIGURE 3.

To summarize this *effort*: The time required in computing and preparing the requisition in the oversea command has been reduced from approximately 30 days to less than 10 days. The way has been paved for developing a method for transmitting requisitions by electrical means.

Remember that this *effort*, together with the *first effort* mentioned, ensures that assets in advance section depots (such as those in Pusan and Inchon) are applied against requisition objectives at the time each requisition is computed.

Streamlining the Oversea Supply Division Requisition Processing Procedure

Through streamlining the editing procedure at the Oversea Supply Division, we hope to cut the 10-day requisition processing time, now required by that office, to about 5 days. The *efforts* previously mentioned have accomplished three things toward this streamlining:

1. An up-to-date nomenclature card has been placed in the hands of the oversea depot (Figure 6). This card is used by mechanical reproduction equipment which makes it next to impossible for the requi-

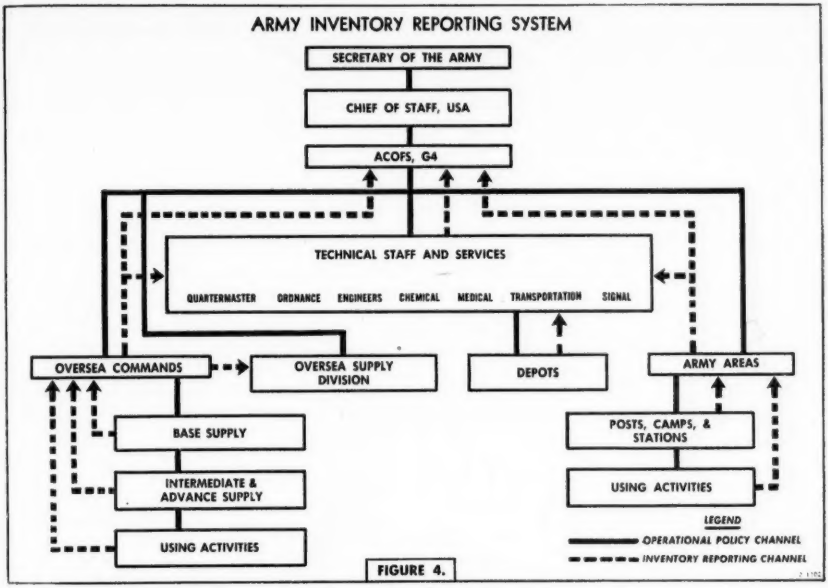


FIGURE 4.

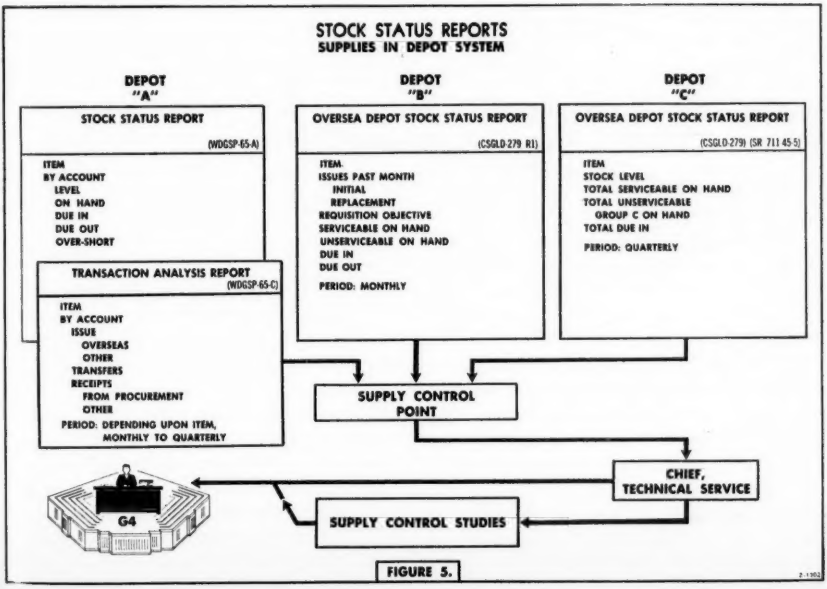


FIGURE 5.

sitioner to come up with erroneous item nomenclature. This will eliminate part of the time-consuming "edit for correctness of nomenclature" in the Oversea Supply Division. The card shown here is a requisition line item card. The first part of the card is static information—it is mechanically reproduced from the nomenclature card furnished to the oversea depot by the chief of each technical service. The balance of the card is prepared by mechanically extending information items from current accounting cards pertaining to the stock status of the item.

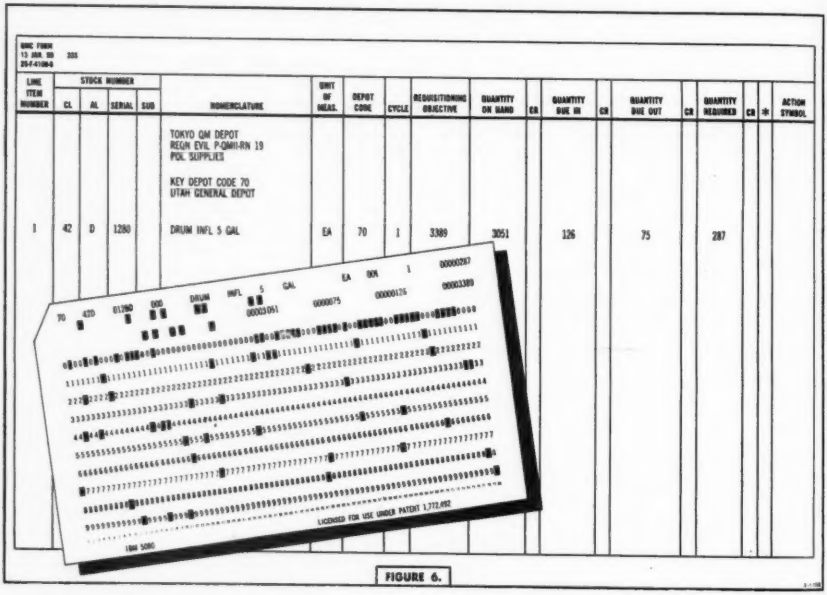


FIGURE 6.

2. The new system makes it feasible for the chief of each technical service to keep the oversea command informed on the "source of supply" in the United States. Punch cards for each item, coded to indicate this information, are furnished the oversea command. The oversea technical service can use these cards to prepare requisitions on the Zone of Interior source of supply, thus obviating the preparation of most of the "extract requisitions" in the Oversea Supply Division.

3. It now is possible to have the oversea command furnish, and keep current, in the hands of the Oversea Supply Division, a "deck" of cards which indicate the computed requisitioning objective for the command for each item.

The Chief of the Oversea Supply Division will edit each requisitioning objective card when it is received. As requisitions flow through his office, he will compare, mechanically, the requisitioning objective shown for each item with that on the *previously edited requisitioning objective card* and manually review only those which do not match. It will no longer be necessary to edit manually each requisitioning objective each time that a requisition is received for the item.

We plan to use the punched card received with the oversea requisition to pro-

duce mechanically about two-thirds of the card, which then becomes the follow-up record in the Oversea Supply Division. Also, we plan to use a duplicate transaction card coming from the Zone of Interior depot to indicate mechanically (in the Oversea Supply Division) that supply action has, or has not, been taken on each item. This can be worked out and, when done, will provide better control of moving stocks. There is no room here for a "crash program." The first two *efforts* mentioned must be completed and in operation before this one can be tackled in a realistic manner. Finally, each step must be well planned and placed in effect in a manner to avoid the disrupting of the current supply system.

The net gain on this project will be efficiency and economy of operation.

Developing Uniform Expeditious Supply Transaction Procedures for Depots

As mentioned before, there are some 20-odd projects and studies now under way, all aimed at improving some area of the supply system.

The project considered to be of major importance is the research and procedural development being done by the Army Supply Planning and Development Group activated by, and operating under the supervision of, the Army G4. Working under the chairmanship of The Quartermaster General, this group is developing uniform, improved stock control and reporting procedures for use in the depots and central stock control points of all the technical services.

The aspect of this group's activities which is most appealing is that it is studying the over-all job. Many of our past endeavors have, because of the shortage of money and time, been devoted to single areas of the supply system. The result has sometimes been that we end with a procedure to do one transaction well. Unfortunately, it may be that this transaction will not necessarily be harmonious with the rest of the supply job and so may not result in a net gain to the supply system.

This group will find fertile ground for their work for a period of about two more years, and, consequently, it would be a mistake to give them a deadline. The members of the group were handpicked and are pursuing their objective energetically. If they are given sufficient time, they will turn in a profit.

The improvements under this *effort* range from the development of more expeditious editing and transaction procedures, to the adoption of methods which place supplies in the oversea command in unit packs which are more nearly in quantitative alignment with the users' needs.

It is reasonable to expect that each of these studies now-in-being will result in some net gain to the supply system—and that this gain will serve to add velocity to the flow of supplies to the oversea command.

The improvements developed through these projects must be introduced into the current system in a manner to avoid disrupting an already heavily taxed supply system—one which is supporting successfully *a combat operation* and *an expanding Army*.

In our determination to make haste, we should not lose sight of the fact that there is a limit to the number of studies and surveys that can be conducted on the supply system at one time without interfering with its operation, or, indeed, without interfering with the other tests and surveys. The capabilities of staff and operating personnel throughout the supply system now are taxed to the maximum in carrying out the increased operational activities as well as implementing the improvement program as it is now planned.

Summary

The Army intends, through this pro-

gram, to provide better logistics support to the oversea commander and, at the same time, improve the economy of operation of the supply system:

1. By strengthening the control of stocks in oversea areas in order to reduce the quantities of supplies held in those areas through the inclusion of all depot assets within the requisitioning objective, and by the elimination of "hoarding."

2. By shortening the supply distribution cycle in order to provide a more responsive supply service to the oversea commander.

3. By obtaining more comprehensive statistical information for use in planning at all levels of stock management, from the advance section depot to the Department of the Army.

4. By increasing the accuracy in computing and preparing oversea requisitions.

5. By reducing the number of personnel required to operate the supply system.

We cannot afford the luxury of a peacetime security based upon stock-piling the vast quantities of modern munitions we would need if war should come. For this could destroy, by exhaustion of our resources, the very security we seek to gain, and could sacrifice the freedoms we seek to preserve. We must instead seek our security in the continuous development of munitions superior to those of any potential enemy, and in the ability to mass-produce them should the need arise.

General J. Lawton Collins

Since seven-tenths of the surface of the earth is covered by water, control of the seas will always be important. In Korea, it is particularly important because we are fighting over and on a peninsula from an island base. The flow of men and equipment into Korea is unobstructed because we control the seas and are prepared to deal with any threat to that control. The sea is the main highway over which we project our military power.

Rear Admiral Arleigh A. Burke

Offensive Partisan Warfare

Lieutenant Colonel George T. Metcalf, *Artillery*
Instructor, Command and General Staff College

DURING World War II, and even prior to that time, only a relatively few military personnel were actively engaged in, or associated with agencies charged with the responsibility for, the planning and conduct of allied-sponsored *offensive* partisan activities. That, together with the high security classification generally surrounding the subject, in all probability accounts for the paucity of official training and reference material readily available for general distribution and use.

Although future warfare undoubtedly will exploit the partisan potential to a vastly greater degree than ever before, there is a notable deficiency of training in and understanding of the offensive capabilities and limitations of partisan movements. Likewise, there is a general lack of understanding concerning the basis for their organization, the problems inherent in their utilization, and the significance—political and military—of fostering and supporting such movements in strategic areas of the world. This deficiency has been recognized by some of the army service schools with the result that limited instruction, designed to provide only a general familiarization with the entire subject of partisan warfare, is now being included in regular courses. Perhaps as a result of experiences in Korea, however, it appears that undue stress is being placed on the defense against guerrilla attack and on counterintelligence and security training, at the expense of *offensive* thinking with respect to the advantages to be gained through the development and employment of partisan elements in support of our own operations.

Partisan warfare is a "weapon" of both strategic and tactical significance, the use of which, in one or another of its forms, can be traced far back into the history of human conflict. As the scope of such conflict increased, so has a proportionate increase been recorded in the use of this weapon to achieve economical, psychological, military, political, or sociological aims. While partisan action was employed extensively, throughout World War II, in conjunction with the military effort of nations or groups of nations, its employment is by no means confined to the period of active military campaigns. Witness the current strife in Burma, Malaya, Indochina, Indonesia, and the Philippines. In the pursuance of an ideological concept, conflicting with that embraced by the legally constituted government, resistance

Friendly partisans, properly directed, controlled, and supported, are capable of executing a wide variety of strategic and tactical assignments, either on their own or in conjunction with regular military operations

movements have sprung into action in each of these areas. The result is continuing acts of open hostility, sabotage, subversion, and depredation.

Meaning of Partisan Warfare

The scope of partisan warfare extends far beyond the commonly associated term "guerrilla operations." The Department of the Army provides an official definition of this term in Special Regulations 320-5-1, *Dictionary of United States Army Terms*, dated August 1950, as:

"Activity carried on against an enemy by people who are devoted adherents to a cause, but who are not members of organized and recognized military forces. *It includes guerrilla action, passive resistance by underground groups, espionage, sabotage, and propaganda.*" (Italics by the author—The Editor.)

Thus we see that the use of secret agents to obtain information (espionage); action by enemy agents or sympathizers with intent to stop or otherwise hinder a nation's war effort or to interfere with or obstruct the defense effort of a nation (sabotage); and any organized or concerted group, effort, or movement to spread a particular doctrine or system of doctrine and principles (propaganda); while integral parts of the over-all meaning of partisan warfare, may or may not be physically associated with or included in the limited field of *guerrilla action.*

Growth and Development

It is unlikely that in a future war (only in rare and isolated instances has it happened in the past), a partisan movement or the manifestation of any form thereof will come into being in the absence of outside stimulation and active assistance. A belief in a cause, an inner rebellion against presumed injustice or oppression, or a compelling faith in an ideological concept may exist. Any one of these may breed discontentment among all or a portion of the peoples of a dominated or occupied nation or locality, but not to the degree necessary to motivate positive action. An alien nation or power, desirous of fanning into flame these smouldering embers of human feeling for the purpose of furthering an opposing political aim or ideology, must recognize the signs and be prepared, overtly or covertly, to provide the required nourishment and stimulation. This may take the form of money, materials, or leadership, but, in any case, should be coupled with well-directed propaganda. Despite every assistance, however, not all the people will be stirred to positive action; and perhaps this is an advantage since problems of control, direction, and co-ordination likely would be insurmountable. T. E. Lawrence, an experienced and highly controversial partisan leader in the Arab revolt of 1917-18, better known as Lawrence of Arabia, in writing of the conditions essential to the success of a resistance movement, states: "It must have a friendly population, not actively friendly, but sympathetic to the point of not betraying rebel movements to the enemy. Rebellions can be made by 2 percent [of the population] active in a striking force, and 98 percent passively sympathetic. The few active rebels must have the qualities of speed and endurance, ubiquity, and independence of arteries of supply." The rebellion which he led successfully encompassed most of the elements which we include in our definition of partisan warfare.

The development of complete partisan warfare may require the introduction of agents, liaison personnel, organizers, and propagandists by clandestine means into the objective area if the enemy is in control. In areas where the enemy is not yet in control but where, through the use of overt military action, he may possess the capability of assuming control at a future time, the problem of organization is simplified. For illustrative purposes, consider the situation in the Philippines during World War II. Although the suddenness

and ferocity of the Japanese attack came as a surprise, the early fall of the Philippines was not initially foreseen. Even so, plans were immediately initiated for the organization of a partisan movement in support of the allied cause. Prior to the surrender of Bataan on 9 April 1942, guerrilla groups already had sprung into action behind the Japanese lines and an espionage system was in operation. Selected American and Filipino military personnel were infiltrated through the lines with the specific mission of going into hiding and later to organize a co-ordinated resistance movement.

Guerrillas of the 125th Infantry, left, greet a patrol of the 41st Infantry as the American troops arrive at Indanan, in the Philippine Islands.—Department of Defense photo.

In late 1942, General MacArthur's headquarters in Australia was in radio contact with partisan elements in the Philippines. General MacArthur himself directed and supervised the development of the intelligence net and the resistance movement based on his intimate knowledge of the Philippines' internal situation and personalities. Communications equipment, weapons, and supplies subsequently were brought in by submarine in ever increasing quantities. Propaganda was continuous. Under the centralized direction and control of General Headquarters, Southwest Pacific Area, a co-ordinated, effective resistance movement grew up. Partisan elements provided a constant flow of valuable intelligence information to the Pacific forces, continually harassed the Japanese, and aided in maintaining the morale and loyalty of the civil population through the dark period, 1942-44. By detailed planning and skillful co-ordination, maximum advantage was gained from partisan support of the landing of General MacArthur's forces on Leyte and Luzon in October 1944. Partisan elements blocked and harassed Japanese troop movements; provided current intelligence information of enemy troop locations, dispositions, and movements; attacked supply installations and communications systems; served as guides, scouts, and flank guards; and performed

many other valuable tasks. For a time, the North Luzon guerrilla force even functioned as a regular combat division in an assigned sector and had United States Army supporting units attached and under its command.

Where Do We Start?

Basic policies concerned with the formulation, support, and employment of active partisan movements must originate at national level. This will ensure that the divergent interests of various military and governmental agencies are co-ordinated and that the political aims of the nation are implemented. Where treaties, alliances, or pacts exist, such as the North Atlantic Treaty, and because of the diversity of long-range political aims and objectives of the nations involved, policies reference to the organization, equipping, support, and employment of general, as well as specific, resistance movements may require international agreement and co-ordination. It would appear advisable, therefore, to charge a specific agency, at the national level, with complete responsibility for all matters incident to the implementation of a partisan program either in conjunction with or separately from planned military operations.

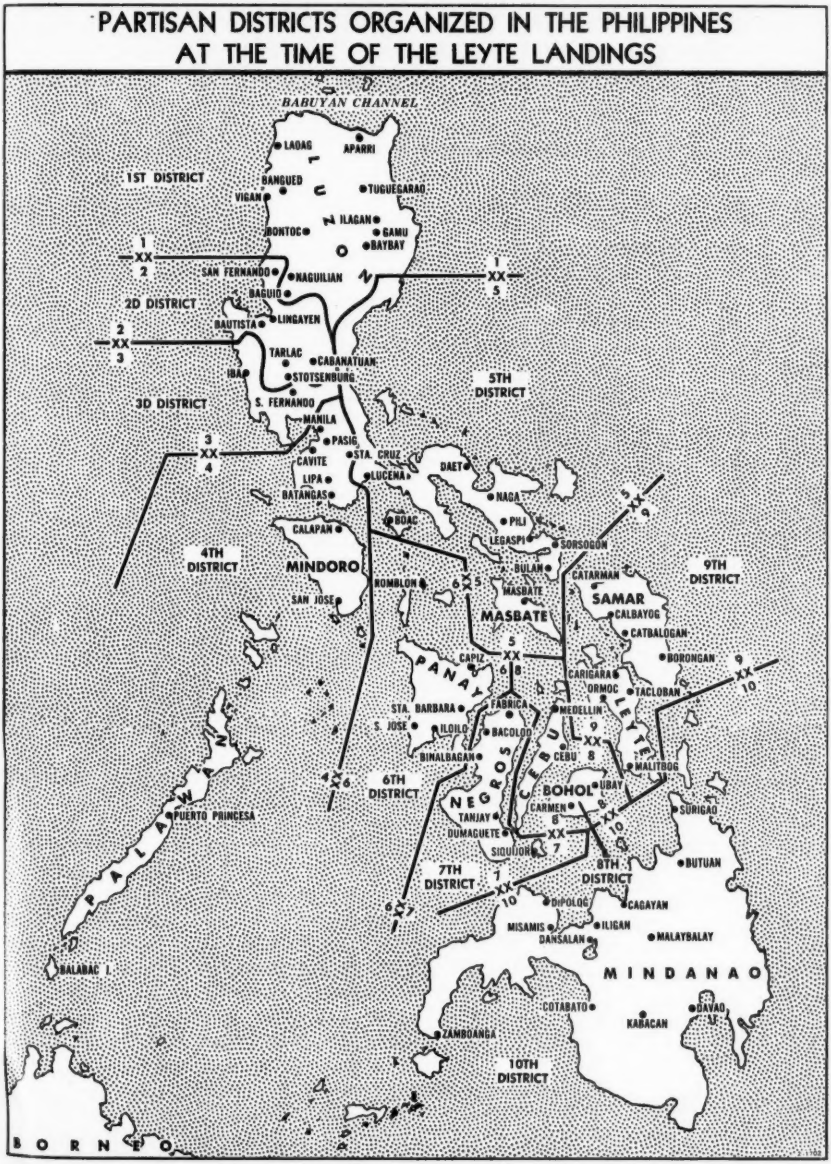
Under the guidance and direction of such a national agency, provision must be made for the execution of plans and policies by the appropriate theater commander under whose jurisdiction the objective area falls. Experience from World War II indicates that the conflicting primary interests of various staff sections and the degree of co-ordination required in integrating the partisan effort with other operations necessitates the inclusion, on the theater commander's staff, of a separate agency charged with the co-ordination and control of partisan activities. Such an agency also should be charged with the responsibility for the establishment and operation of those special training centers required in the theater for the training and indoctrination of agents, organizers, propagandists, specialists, and potential resistance leaders. Training personnel and trainees should be selected on the basis of intimate familiarity with the area of operations and the customs and language of the people. For the execution of strategic missions by partisan elements, decentralization of control below theater level would appear to be impracticable, particularly if the regular military forces of more than one nation are being employed under the command of the theater commander.

Strategic Employment

World War II evidenced a change in the general character of war from positional-type battle lines to a war of movement.

Modern armies, in the future, will range over vast areas, with a loose and fluid front, long lines of communications, and a multiplicity of rear area installations for the provision of logistic and administrative support. Military operations will be completely dependent on secure, continuously operating industrial complexes and supporting economic bases well in the rear. This condition invites strategic employment of the partisan potential in all of its forms, and such employment is not confined solely to a period of active hostilities nor to the nations against whom military operations may be contemplated. Any future war between major powers gives every promise of being total in scope. Nations, though not actively participating in an alliance with either side, will, because of trade agreements, economic considerations, and political influence, be much affected by forms of partisan warfare strategically employed.

Partisan sources are most adaptable for strategic exploitation. They provide a wide variety of source material for strategic intelligence and for the breeding of discontent and disaffection. In addition, they can effect work slow-downs, and engage in subversive activities and sabotage in


PARTISAN DISTRICTS ORGANIZED IN THE PHILIPPINES AT THE TIME OF THE LEYTE LANDINGS
BABUYAN CHANNEL
LAOAG
APARRI
1ST DISTRICT
BANGUED
TUGUEGARAO
VIGAN
ILAGAN
BONTOC
GAMU
BAYBAY
1 XX 2
1 XX 5
SAN FERNANDO
NAGUILIAN
BAGUIO
2D DISTRICT
BAUTISTA
LINGAYEN
2 XX 3
TARLAC
CABANATUAN
IBA
STOTSENBURG
5TH DISTRICT
3D DISTRICT
S. FERNANDO
MANILA
PASIG
3 XX 4
STA. CRUZ
CAVITE
LUCENA
LIPA
DAET
BATANGAS
NAGA
BOAC
PILI
LEGASPI
SORSOGON
CALAPAN
4TH DISTRICT
MINDORO
ROMBLON
BULAN
MASBATE
CATARMAN
9TH DISTRICT
SAMAR
SAN JOSE
CALBAYOG
CATBALOGAN
CAPIZ
BORONGAN
CARIGARA
ORMOC
TACLOBAN
PANAY
STA. BARBARA
FABRICA
MEDELLIN
S. JOSE
ILOILO
BACOLOD
LEYTE
BINALBAGAN
CEBU
MALITBOG
NEGROS
BOHOL
UBAY
CARMEN
SURIGAO
PUERTO PRINCESA
TANJAY
DUMAGUETE
SIQUIJOR
6TH DISTRICT
7TH DISTRICT
8TH DISTRICT
BUTUAN
DIPOLOG
CAGAYAN
MISAMIS
ILIGAN
DANSALAN
MALAYBALAY
BALABAC I.
MINDANAO
COTABATO
DAVAO
KABACAN
ZAMBOANGA
10TH DISTRICT
BORNEO

vital industries and along important lines of communications, as well as spread aimed propaganda and plant false information.

Developments in the field of signal communications equipment and techniques, and in aircraft, as well as airlift and air-delivery techniques, make possible the far greater employment of partisans, both strategically and tactically, than ever before.

Tactical Employment

Changes in the conduct of modern warfare likewise favor the extensive use of certain forms of partisan warfare in direct support of tactical operations. A field army or task force could effect the release of large numbers of military personnel for other duties by the appropriate employment of friendly partisans, within its own lines, on service, security, and administrative tasks. Examples of only a few of such tasks are:

1. Guarding prisoners of war.
2. Regulating the flow of refugees congesting roads and important communication centers.
3. Providing police and law enforcement assistance to military government agencies.
4. Detecting and apprehending enemy collaborators, agents, and propagandists, in co-ordination with counterintelligence agencies.
5. Burying the dead.
6. Augmenting security forces protecting dispersed rear area installations.
7. Operating against enemy guerrilla groups and bypassed enemy centers of resistance.

By reason of their intimate knowledge of the terrain, people, and language in the local area of operations, partisans also may render much valuable assistance as interpreters, guides, and scouts for patrols, flank protection in the form of warning and delaying the enemy, and in the performance of many similar missions.

Communications, liaison, and control having been established, active combat missions, as well as intelligence, propaganda, and sabotage missions, may be assigned to partisans in the tactical zone of operations behind the enemy forces. It is here that the most careful co-ordination and a thorough understanding of the partisan organization and its capabilities are required if locally favorable results are to be achieved. Unless the partisan element has had a long period of organization, extensive tactical training, and is thoroughly equipped (all of which is most unlikely), it cannot be assigned missions involving the attack of large, regular enemy forces or organized positions.

Small partisan forces, lightly equipped, are highly mobile. They can tie down large numbers of enemy troops and disrupt major enemy efforts by a series of hard, fast strikes in his rear followed by immediate dispersion before a regular force can retaliate. To overequip them, thus lessening their mobility, or to assign them missions at the limit of or beyond their capabilities jeopardizes their chance of success and threatens their loss through destruction by the enemy.

Missions which might be appropriate for assignment to partisan elements are:

1. To attack security guards and destroy bridges, supply points, ammunition dumps, pipe lines, signal communication cables and centers, power lines, railroads, and the like, specifically selected for their value to the enemy.

2. To blockade unguarded stretches of roads and railroads, the destruction of which is undesirable or impracticable, or to spread nails, small mines, and comparable tire-damaging objects along extensively used roads.

3. To attack messengers, road guides, roving patrols, traffic controllers, or other enemy personnel functioning individually or in small isolated groups.

4. To mark targets for attack by tactical aircraft using lights hidden from

ground observation, smoke, cultivated fields, lumber piles, or other means.

5. To start and spread fires to destroy enemy troops and supplies or to interfere with troop movements.

6. To spread rumors, atrocity stories, and the like so as to destroy enemy morale or to cause refugees to clog the roads in the enemy rear areas.

7. To observe and report the effects of bombing or artillery fire, or, in some cases, to adjust the long-range fires of artillery and guided missiles.

8. To provide information concerning enemy troop movements, dispositions, identifications, morale, casualties, locations of command posts and supply dumps, and similar information of immediate tactical value.

9. To rescue prisoners of war and hide escapees and evaders.

10. To prevent the destruction of bridges, power sources, and similar installations upon the withdrawal of the enemy, where immediate contact with friendly forces can be expected.

Other forms of offensive assistance may be realized in support of particular specialized operations. For example, in the case of a planned airborne assault deep into enemy-controlled territory, partisan sources could provide essential strategic information well in advance of and right up to the time of the assault. In conjunction with the tactical assault, they could attack and secure weakly held military or civilian airfields in the objective area; disrupt the signal communications of enemy forces; mark hidden airfields, drop zones, and objectives; mark targets for tactical air attack; block the main routes of approach into the area; provide guides in the vicinity of drop and landing zones; assist in caring for and the evacuation of injured; assist in the collection and movement of supplies; and perform innumerable similar missions.

An excellent illustration of partisan assistance in an airborne assault was the World War II seizure by German parachute troops of the Maastricht bridge in Holland. The following descriptive account of this operation was taken from the diary of a British Air Intelligence officer:

"The taking of the Maastricht bridge is a fairy tale, amazing in its daring. A plain clothesman walked over to the sentry on the bridge on the East bank and asked him, as a friend, to allow him across the bridge for a last word with a pal on the West bank. He was allowed to pass, he walked across the bridge and after a few minutes' conversation strolled back towards the sentry with his friend. The second man then, gangster-like, shot the sentry and bolted back to the far bank, where he disconnected the wiring of the mines prepared for the destruction of the bridge. While this was being done, the first man possessed himself of the sentry's rifle and easily prevented any interference. The timing was a work of genius: within a few minutes, parachutists and gliders descended in a cloud on top of the Dutch fortifications west of the bridge, which is just in Dutch territory. The Germans ran around pushing hand grenades into loopholes, throwing bombs into gun emplacements and casemates, and generally playing hell with the place, literally before anyone realized that an attack was about to develop at all. They threw their bombs into open doors, into the turrets of the casemates, and, within an hour, with a loss of only 300 men, the Maastricht bridgehead was established. It had never been supposed that such an achievement would cost less than 50,000 lives."

Command and control of partisan elements which are to be employed in tactical roles should be decentralized downward to army group, army, corps, and division commanders as required. Control, liaison, and co-ordination teams, trained and organized at theater level, should be attached to assist and advise the tactical commander. The level at which command and control rests will be determined by the

size of the regular military force involved, the width of its zone or sector, the organization and size of the partisan force and the mission it is to perform, the extent of communications, the amount and type of logistic support required and the means of delivery, and many other similar considerations. It must be remembered that the need for flexibility, mobility, security, and dispersion in partisan operations is not consistent with the tactical concept of strict adherence, by military forces, to the limitations of lateral boundaries. Hence, thorough co-ordination must be ensured with higher, lower, and adjacent headquarters throughout the planning and operation phase of a supporting partisan effort.

Responsibilities of the Tactical Commander

The employment of partisans in conjunction with regular forces engaged in tactical operations imposes upon the tactical commander and his staff certain added responsibilities, though none which are alien to the well-known principles of leadership. To enumerate a few:

1. Know the partisans with whom you are working, their habits and customs, their convictions, their methods of operation and the organization therefor, their physical and material capabilities and limitations, and their motivation. Also, ensure that your subordinate commanders likewise become familiar with these factors and that their troops are indoctrinated as to their attitude to and treatment of partisan elements.

2. Assign missions well within the capabilities of supporting partisan elements, and make provision for the supplies, equipment, and weapons required to carry them out.

3. Establish and maintain continuous direct liaison with partisan leaders. Keep to a minimum all intermediate contacts. (This should be the primary mission of the attached theater team.)

4. Accept the advice and counsel of the partisan leader, use it judiciously, but stand firm on control in the execution of decisions.

5. Keep the partisans busy, thus avoiding a loss of interest, alertness, aggressiveness, and the dissipation of their potential.

6. Follow their established chain of command and control in providing information, supplies, and equipment, or in issuing instructions.

7. Avoid oversupply or overequipping. Provide captured weapons and equipment where appropriate, thus reducing resupply problems and capitalizing on enemy ammunition, supplies, and equipment acquired.

8. Avoid entanglements such as those involving political commitments or promises of future reward in any form.

9. Maintain adequate records and reports concerning operations in which partisans participate, to include the nature and type of the participation and the partisan units, groups, leaders, and other personnel involved.

10. When the need for the support provided by partisans ceases to exist, and upon theater approval, ensure that they are disarmed, that administrative settlements are made, and that demobilization is effected.

Conclusions

Partisan warfare, in all its forms, will be widely exploited in any future war. Its employment involves no principles new to the art of warfare, but requires the application of little-understood and highly specialized techniques. The organization of an effective partisan movement is relatively slow, and is associated with extensive prior planning, establishment of appropriate national aims and policies, long periods of indoctrination, careful selection and screening of personnel, and detailed training. A partisan movement, properly directed, controlled, and supported, is a valuable ally capable of executing a wide

variety of strategic and tactical assignments, either in conjunction with regular military operations or in the absence thereof. The political aims or ideologies motivating a dissident people to partisan action must not be inimical to those objectives of the force or nation providing the outside stimulation and support. Professional military personnel must receive thorough orientation and training in the offensive, as well as the defensive, aspects of partisan warfare.

The best way to meet the threat of aggression is for the peace-loving nations to act together. If they don't act together, they are likely to be picked off, one by one.

President Harry S. Truman

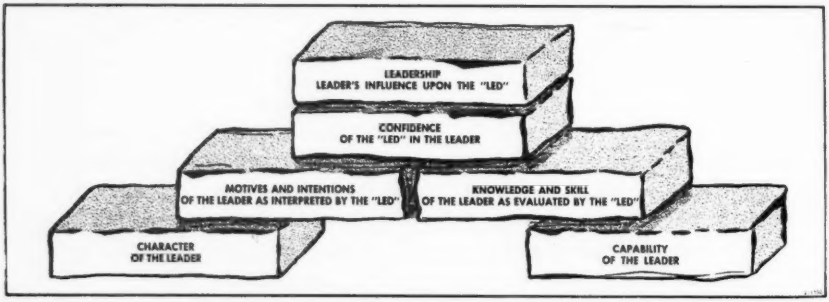
The challenge America now faces has no parallel in our Nation's history. We know that our very existence as a free nation depends on our ability to maintain strong defenses both at home and in collaboration with out allies abroad. Unless we maintain those defenses, the threat of Soviet imperialism will become an increasingly dangerous menace to the free world. Our problem is not one which can be measured in terms of months or of years, for no one can truthfully predict how long we must maintain a strong military posture.

Secretary of the Army Frank Pace, Jr.

The Structure of Leadership

Colonel Walter E. Sewell, *Infantry*
Professor of Military Science and Tactics, State University of Iowa

THE purpose of this short article is to highlight the basic fundamentals upon which leadership in the United States Army rests at the present time. Leadership is relative and it is impossible to define it absolutely or to list the qualifications for all times and all men. The leadership with which we are concerned is the type which will inspire the American citizen in uniform, for it must be remembered that the citizen soldier is an enlightened, intelligent individual, bred in an environment of personal freedom and human dignity. He has been taught to form his own opinions and to draw his own conclusions. Consequently, the amount of respect which he has for a particular authority depends upon his evaluation of that authority.



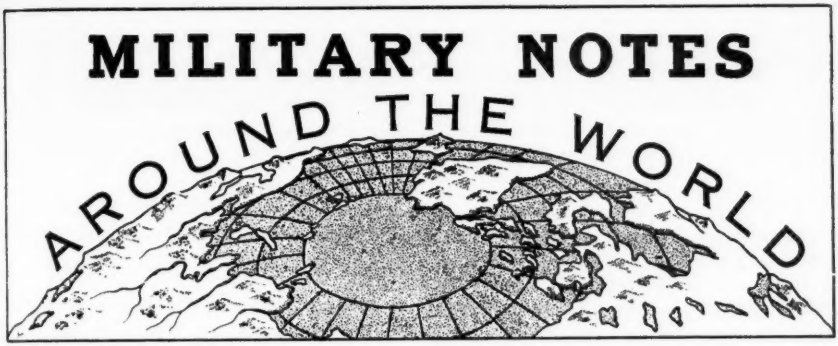
The man who is to be developed into a leader of this individual must have *character* and *capability* (see chart). These two qualities are the cornerstones of the pyramid which culminate in *leadership* at its pinnacle.

To the American soldier, the *motives* and *intentions* of the leader are important, for he interprets them in the light of what he sees and hears. By definition, the leader with good character will have only the finest motives and intentions, and they will be so interpreted by the large majority of his command.

The American soldier demands *knowledge* and *skill* of his leader, and the man with *capability*, through hard work and study, can acquire those attributes in sufficient amount to convince his command that they can rely on his judgment.

If the leader's *motives and intentions* are above suspicion, and his *knowledge and skill* are unquestioned, full and complete *confidence* of the "led" in the leader is the natural result. Such confidence must be developed by the leader—it is the root of his influence, it is the measure of his *leadership*.

MILITARY NOTES AROUND THE WORLD



UNITED STATES

Plexiglass Teeth

Plexiglass teeth applied with sable-haired brushes may do away with the "grind and groan" methods employed by today's dentists, if studies planned by the Air Force prove successful.

Plexiglass teeth are really plastic fillings derived from the same base used in making plexiglass. Sable-haired brushes are used in applying the filling as a pleasant alternative to the present method of grinding them into the cavity.

Plastic fillings are not new. German scientists developed them a decade ago, and civilian dentists have been testing them to a varying degree for the past several years. However, use of plastic fillings poses special considerations for the Air Force—specifically, how they are affected by altitudinal extremes, temperatures, and humidity encountered in flight, and how they stand up under climate ranging from subzero to desert temperature. Therefore, a 3-year program began recently at 25 air bases scattered about the globe to observe how the plastics behave under a wide range of climatic conditions.

Plastics offer many advantages. They can be blended into varying degrees of color to match the patient's own teeth, and they are tough and do not dissolve in the fluids secreted by mouth glands.—*Armed Force.*

Atomic Submarine

The Navy recently named its atomic submarine the *Nautilus.* By so doing, many months in advance of the supposed completion date of the radically designed and powered undersea craft, the Navy further encouraged speculation that the submarine was coming along beyond earlier expectations.—*The New York Times.*

Ocean-Sounding Device

Ocean sounding becomes more accurate with an improved type of echo-sounding equipment which has been developed for the Navy. The new equipment will give accurate readings of depths down to 6,000 fathoms, or 36,000 feet.

Echo sounding involves the use of sound waves emitted underwater from the hull of a vessel which travel to the bottom of the ocean and are reflected back. Special equipment to send out powerful sound waves and pick up the echoes is required. Depth is determined by the interval of time required by the wave to reach the bottom of the ocean and return.

The echo-sounding apparatus consists of two units, a transducer which transmits and receives signals from the bottom of the ship, and the main electronic unit located on the bridge or in the navigating room.—*Science News Letter.*

Rubber Production

During 1952, the world output of crude and man-made rubber should be about 2,900,000 long tons, while world consumption is expected to be less than 2,500,000 long tons.—*The New York Times.*

Mobile Radio Station

A mobile radio broadcasting station, developed by the Army Signal Corps, has started beaming propaganda programs behind the Iron Curtain. This station-on-wheels is being used overseas by pyschological warfare teams to beam the Voice of the West to the Soviet Union and her satellite countries.

It has the latest transmitting and receiving equipment, and can be operated either on its own power or on outside commercial lines. The unit is housed in a pair of 26-foot trailers and three 11-foot shelters. It can be carried by truck and trailer on land, or by cargo planes or ships. On amphibious assaults, such units could be floated ashore after simple sealing preparations.

The broadcast studio and control room are soundproof and air conditioned. Equipment includes the latest control consoles, magnetic tape recorder-reproducer units, turntables, and remote pickup units for on-the-spot broadcasts away from the studio.—*Armed Force.*

Improved Aerial Camera

A recently developed aerial camera, intended to record the effect of machine-gun fire by fighter aircraft, has its own automatic, built-in heating system, which cuts in at temperatures when the shutter would otherwise freeze, or the film become brittle.

The camera, about the size of a man's hand, will be synchronized with the plane's guns. It continues operating for a few seconds after firing has stopped in order to judge the results of the machine-gun burst more accurately.—*Armed Force.*

New Naval Force

The Atlantic Fleet is planning to combine its antisubmarine "hunter-killer" forces into a single operational command including planes, blimps, small carriers, and destroyers.

An intensive training program is planned for the "hunter-killer" forces, whose mission it is to seek out and destroy submarines.

The new command will have planes and surface ships assigned permanently, and patrol bombers and blimps on a temporary basis.—*The New York Times.*

Artificial Harbor

Civil defense experts will know how much time it will take to make our harbors safe after an underwater atom-bomb explosion as a result of a "theoretical flume" in operation at Woods Hole Oceanographic Institution in Massachusetts.

The flume is an oblong glass channel. Fresh water comes in at a steady rate at one end and salt water, regulated to simulate the tides, comes in and goes out at the other end. When dye is added to the salt water, it can be seen moving up the stream as a sort of wedge.

With this model of a theoretical harbor, scientists can study how long it will take for radioactive water and debris to be flushed out to sea.—*Science News Letter.*

Winter Combat Uniforms

Preliminary development by the Army Quartermaster Corps of a revolutionary single-layer, molded-plastic winter combat garment, employing the so-called "vapor-barrier" principle and minimizing the need for drying wet clothing in the field, has been announced by the Army.

The new garment is designed to be worn without underclothing under certain field conditions and would drastically reduce the number of items and the weight of winter combat uniforms.—*Army Navy Air Force Journal.*

Floating Radio Station

The 5,800-ton Coast Guard cutter *Courier*, the first unit of the State Department's "Operation Vagabond," a fleet of permanent floating radio stations intended to pierce the Iron Curtain with messages from America, has begun operations as a relay point for the Voice of America's programs beamed to the Soviet Union and her satellite countries.—*The New York Times.*

Electric Lamps

Aluminum instead of copper is being used in the bases of incandescent electric lamps to help save the critical metal.

The new lamps are claimed to be identical in life expectancy, efficiency, and cost to the consumer. Aluminum is 2½ times as good an electrical conductor as brass. However, an alloy will be used in the new bulbs instead of pure aluminum, in order to dodge certain manufacturing problems. —*The Christian Science Monitor.*

Machine Tools Storage

The Army has announced that a huge air-conditioned cave near Atchison, Kansas, soon will be taken over for the storage of defense machine tools not yet needed in the mobilization program.

The cave has a floor space of 14 acres. It was formerly used by the Department of Agriculture for storing surplus food. —News release.

Giant Vibrator

Testing vibration effects on aircraft and guided missile parts has resulted in Bell Aircraft's development of a giant vibrator that can shake an object 5 feet up and down as many as 15 times a second. The only one of its kind, the device can simulate aircraft and missile flight path vibrations and the physical vibration and oscillation experienced by supersonic aircraft.—*Aviation Age.*

First Turborotor Helicopter

An important milestone in helicopter history was reached recently with the first application of a gas turbine engine in the Navy *K-225* helicopter. The turbine installation in the *K-225* is similar to a turboprop installation in an airplane in

The world's first turborotor helicopter—the new turbine-powered *K-225* helicopter.

that the turbine's exhaust is transformed into mechanical power to the rotors.

Engineers predict marked increases in the turbine-powered helicopter's performance as compared with the same machine powered by a piston engine. Most of the increased performance can be attributed to the great saving in weight, because the gas turbine weighs less than half the weight of the normal piston engine.

Other advantages include mechanical simplification and the ability to operate on low-grade fuel (kerosene) as well as on high-octane gasoline.

Flight testing of the helicopter will be conducted for an extended period to evaluate fully the characteristics of the new type power plant.—News release.

Radio and TV Controls

The President has signed an order providing for emergency controls over radio and television in the event of an attack on this country.

The idea is to prevent an enemy from using the radio or television signals as guiding beams for planes, guided missiles, or other devices.—News release.

Slow-Descent Parachute

A parachute, designed specifically for use in airborne operations, has been developed which permits the parachutist to reduce the speed of descent as a landing is approached.

There are two sets of shroud lines to carry the user. One set is attached to the outer edge of the parachute canopy, and the other to a smaller section surrounding the center of the canopy. Means are provided so that the user can shift his weight from one set to the other.—*Science News Letter.*

Training Camps

The cantonment areas of seven World War II training camps will be partially reconstructed in the near future. The installations involved are Camp Blanding, Florida; Camp Bowie, Texas; Camp Gruber, Oklahoma; Camp Robinson, Arkansas; Camp Shelby, Mississippi; Camp Swift, Texas; and Camp White, Oregon.

Approximately 2,200 acres of land will be necessary at each of the installations to provide sites for troop housing and administrative facilities. Essential utilities and roads also will be repaired or reconstructed. The cost of the project is estimated at about 27½ million dollars. —*Army Navy Air Force Register.*

Radar for Jet Fighters

A small automatic radar device for fighter planes, credited with giving American jet pilots a marked advantage over enemy craft in Korea, is being produced on an assembly-line basis.

The device, developed soon after the last war, is being installed in Air Force, Navy, and Marine Corps fighter planes throughout the world. It eliminates guesswork on the part of the pilot-gunner by feeding information into a computing gun sight, with a direct hit assured if the pilot keeps the cross-hairs of his sight on the target. —*Armed Force.*

Steel Production Goal

The Defense Production Administration has set a steel production goal of 120 million tons annually beginning with 1954. That would be about 15 million tons above the production figure for 1951.

By 1954, the Defense Production Administration also expects production capacity to be about 123 million tons a year, an increase of 23 million tons in new facilities since the beginning of the conflict in Korea.—News release.

Man-Made Gravel

Discovery of a process to change mud, sand, or clay into good, useful gravel has been announced by Cornell University.

The man-made gravel is not cheap, but it promises to be sufficiently economical to be useful for building roads where gravel is scarce.—News release.

Telephone Statistics

The United States has 11 million more telephones than all other nations in the world combined.

The new issue of "Telephone Statistics of the World" states that the world total was 74,800,000 telephones on 1 January 1951. The United States total at that time was 43,003,832 (now more than 45 million).

The United Kingdom was second in national totals with 5,433,674 telephones and Canada third with 2,911,900.—News release.

Fireproof Fabrics

The Army has developed an improved method of permanently fireproofing cotton, woolens, and part-rayon fabrics.

Treated fabrics will char but will not flame after being treated with the new chemical. The fabrics may be laundered, dry cleaned, or waterproofed without affecting the permanence of the fireproofing. The cloth will not deteriorate any faster than untreated fabrics.—News release.

Army Aircraft

The Army and the Air Force have reached an agreement which stresses that in the future "performance of functions" and not "specific weight restrictions" will be the criterion for the purchase of Army aircraft.

This will mean that the Army will have heavier planes for its employment in transportation, observation, and other missions than previously.—*Army Navy Air Force Journal.*

Aircraft Radio Ranges

Spoken words, uttered automatically and almost continuously, are to be used soon to identify to pilots of aircraft certain of the stations that provide the radio ranges to guide them on their course. They will not replace the three-letter Morse code identification now used, but will alternate with them.

This voice identification will prove of considerable help to pilots who have a limited knowledge of the Morse code. In the case of a strange station with code identification only, the pilot must look up the three-letter identifier in a guide to be sure what range he is receiving. The voice transmission makes this unnecessary.—*Science News Letter.*

Organized Reserve Corps' Schools

The Army is opening 65 new schools in key cities throughout the United States for the training of members of the Organized Reserve Corps.

This will bring to 124 the instructional facilities opened for the corps. A total of 334 schools is scheduled by 1954.

The schools are intended primarily to provide branch and command and general staff training for reserve officers who are not assigned to reserve units. However, the Army plans to extend the program gradually to include specialist training for enlisted reservists.—*The New York Times.*

Navy Flight Uniform

A new uniform has been approved for wear by Navy fliers and aviation nurses. It will be the same shade of winter green as that now worn by Marine Corps officers.—*Army Navy Air Force Journal.*

Warning Device

A device to end a pilot's worries about lack of oxygen has been developed by the Air Force.

The pilot wears a tiny, earring-like device attached to either ear. Using this device, connected by wire to the plane's instrument panel, he will be warned promptly when his oxygen supply is leaking or if his hose has become disconnected.

Operating on an electric eye principle, the warning device uses the ear lobe as a light filter. It is activated by the slightest change in the oxygen content of the blood, since blood lacking in oxygen changes to dark red. Ordinarily, it is difficult or impossible to detect such an oxygen lack.

The photoelectric eye detects the blood's color change and instantly a red light flashes brightly on the instrument panel, warning the pilot of impending danger and the possibility of passing out.—*Science News Letter.*

World Income

North America, with less than one-tenth of the world's total population, produces nearly 45 percent of the world total of national incomes, according to a United Nations' survey. Asia, with more than half the world's population, produces only 10 percent of the world income total.

In terms of United States dollars, the survey shows the continental areas rank in per capita national income as follows: North America, $1,100; Oceania, including Australia and New Zealand, $560; Europe, $380; The Soviet Union, $310; South America, $170; Africa, $75; and Asia, $50.—News release.

GREAT BRITAIN

Gas Tank Bomb

British inventors have devised a bomb to keep planes from blowing up in combat.

The bomb, about half the size of a grapefruit, quickly snuffs out explosions of high-octane gasoline such as caused the loss of hundreds of World War II bombers. Such explosions resulted when bullets or fire touched off gasoline fumes in fuel tanks.

The bomb, containing carbon tetrachloride, is placed inside the tanks. When an explosion begins, it is detected by a highly sensitive diaphragm built into the bomb. Within a few thousandths of a second the bomb goes off, and its suppressor gas completely dampens the explosion.—News release.

Aerial Prospecting

A technique of prospecting the low-grade uranium deposits of Great Britain from the air has been tried out and declared of practical value by two scientists from the Government's atomic research station at Harwell.

Test flights were made last year in a converted Royal Air Force plane with the detection apparatus sticking out below the fuselage. The device consisted of 49 self-regenerating Geiger-Muller tubes with rate-meter circuits, automatic recorders, and a power pack.

To see how high they could still get a reaction from the counters, the scientists spiraled over the Harwell plant where samples of uranium oxide had been left on the ground. These surface deposits were just detectable at 500 feet when the plane was flying at 120 miles an hour.

According to the scientists, a far more sensitive degree of detection could be achieved by using photo-multiplying or scintillation counters, which make use of the fact that light is emitted when charged particles strike a fluorescent surface.—*The New York Times.*

Steel Controls

The Government announced recently that because of a 1,500,000-ton steel shortage it had decided to allocate steel to manufacturers on the basis of priority of national interest. In other words, rearmament and exports come first and consumers' needs last (MILITARY REVIEW, Nov 1951, p. 69).—*The New York Times.*

Catapult Demonstration

A high-performance catapult capable of launching modern carrier-borne aircraft, now being developed by the Admiralty, has been demonstrated in the United States.

The catapult is likely to be among the most important developments for naval aviation since the war. It is steam operated and has no rams or hydraulic purchases. The hook to which the plane is connected is directly attached to a piston driven along a cylinder by high-pressure steam from the ship's main boilers. The amount of steam required for sustained operation is considerable, but tests have proved that the demand put upon the main boilers can be met without interfering with the satisfactory operation of the ship.

The catapult is expected to affect naval air tactics by reducing the necessity for an aircraft carrier to steam for long periods into the wind to fly off its aircraft, and in certain conditions enable aircraft to be launched while the ship is stationary.—British Information Services.

Small Boat Registry Scheduled

All privately owned small craft in Britain are to be registered by the Admiralty. In wartime, they would be used as examination vessels for contraband control and similar examination duties.

The Admiralty has announced that the registry is part of its ordinary planning. A similar register existed before the last war.—News release.

WESTERN GERMANY

Hungarian-Language Radio Station

The power of Radio Free Europe's new Hungarian-language station, broadcasting near Frankfurt, Germany, has been increased to 50,000 watts, thereby enabling it "to saturate all of Hungary with messages of freedom and hope," according to an announcement by the National Chairman of the Crusade for Freedom.—*The New York Times.*

Pneumatic Mailing Tubes

West Berlin's pneumatic intracity mailing tubes, which deliver letters within an hour, are operating again for the first time since the war.

Some 30 miles of tubes are in operation, with 33 receiver stations.

Letters are flashed through the tubes in 6-inch metal cylinders. Each letter may weigh up to 100 grams (more than 3 ounces) and costs 15 pfennigs (about 4 cents).—News release.

Atomic Energy Controls

The allies have imposed new controls on the field of atomic energy in Western Germany. Under the new regulations, the approval of a three power military security board is required for the export of a wide range of industrial items used for atomic energy purposes. These items include certain types of nickel wire, woven wire mesh, induction furnaces, and valves. —News release.

Machine Tools

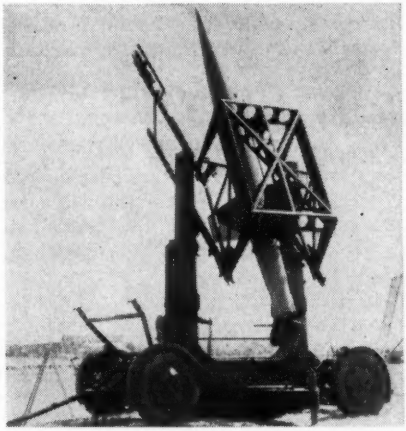
Germany is regaining her prewar position as a world supplier of machine tools, according to a report published by the United Nations' Statistical Office.

The report stated that during the first half of 1951, the United States exported 96 million dollars worth of machine tools. Next in importance was Western Germany with 33 million dollars worth of machine tools exported.—*The New York Times.*

SWITZERLAND

Antiaircraft Rocket

Switzerland has developed a new antiaircraft rocket—the "Oerlikon"—for defense against high-altitude bombers. The



Above, the antiaircraft rocket. Below, the control panel and radar tracking equipment.

rocket, with an over-all length of about 16½ feet, can reach an altitude of about 75,440 feet.—*Aviation Age.*

DENMARK

Danish Defense

To establish a permanent, fully trained force of one division to carry the first shock of a sudden attack, the Danish Government has decided to extend the conscripts' service from 12 months to 18 months (MILITARY REVIEW, Aug 1951, p. 69).—*The New York Times.*

AUSTRALIA

Airport Project

About 40 Royal Australian Air Force personnel have left Australia for the Cocos Islands where they will build a new intermediate airport for the projected Indian Ocean route from South Africa to Australia.—*The Aeroplane*, Great Britain.

FRANCE

Officer Training System

Complete revision of the system of officers' training in France has been decided by the Ministry of Defense and will come into full operation with the graduation classes from the school of Coetquidan in June and July.

After the war, Coetquidan, which replaced France's time-honored infantry academy at Saint Cyr, was made into a single school for officers' training for all branches of military service. This experiment has been abandoned.

Future officers will be separated into two academies, one for an elite of officers capable of advancing into higher studies, the other, less strict in entry requirements, which will train noncommissioned officers and officers of the lower grades who come up from the ranks.

Previously, two schools along these lines were maintained at Saint Cyr and Saint Maixent, and a number of specialized schools were maintained for different branches of service. From now on, the two academies in Coetquidan will take charge of all officers' training for every service arm, with the exception of the technicians of the Polytechnical School in Paris. A course of 1 year will be given in the lower academy and of 2 years in the higher school. The graduates later will do a term of specialization in the various arms to which they are assigned, at Saumur for motorized sections and cavalry, at Chalons for artillery, at Angers for engineering, and at Fontainebleau for supplies.—*The New York Times.*

BELGIAN CONGO

Native Troops

Some 20,000 efficient and well-disciplined native troops, many of them veterans of World War II, are undergoing training to help make the Belgian Congo, and the whole of the vast African continent, strong enough to resist possible Soviet aggression in the event of war.

The men are training under actual combat conditions in jungle and veldt. They are led by 356 Belgian officers and 406 noncommissioned officers, all of whom have signed a voluntary term of service for a period of 5 years.—*The Christian Science Monitor.*

KOREA

One-Man Stretcher

A one-man stretcher has been used in Korea to speed up and simplify the removal of wounded from the battlefields.

The new device, developed by the Navy, is a cross between a regular stretcher and a wheelbarrow, with two retractable wheels at one end. If two men are available, the wheels are retracted so that it serves as an ordinary stretcher. One bearer alone lets down the wheels and trundles the stretcher like a wheelbarrow. —News release.

Air Strips

During the last year, X Corps engineers have been carving two air strips a week from Korea's rugged terrain.

Since the X Corps stormed ashore at Inchon, corps and divisional engineers have built 25 airfields in North Korea and 47 in South Korea. New strips are being built constantly at a rate of nearly 2½ miles of runway a month.

In a year's time, the engineers have chopped 21 miles of air strips out of Korean soil. They have extended from the old "Pusan perimeter" to the Yalu River, and have been built in temperatures that ranged from 100 degrees above to 25 degrees below zero.—*The New York Times.*

BRAZIL

Control Law

A law giving the Government power to control prices and buy and sell essential goods recently became effective in Brazil. The new law provides that the Government can intervene in the economic life of the country in cases of shortages of goods and assures distribution of essential items to the people.—News release.

CANADA

'Flying Boxcars'

Canada has ordered 48 *C-119 Flying Boxcar* transports from the United States at a total cost of more than 38½ million dollars.—News release.

Storage Depot

A modern 6 million dollar storage depot is being constructed in Montreal for the Royal Canadian Navy.

The depot will answer an urgent need for storage space for naval materials and supplies that are being manufactured in ever increasing quantity under the current defense production program.

Incorporating the latest features and facilities, the new depot will be modern in every respect. Efficiencies will include a pneumatic tube system for the circulation of documents, a public address system throughout, fire protection devices, and modern material handling equipment.

When completed, a staff of some 500 naval and civilian personnel will operate the depot.—*The Crowsnest*, Canada.

TURKEY

Jet Aircraft

The Turkish Air Force recently received the first of a number of jet planes to be delivered as part of American military aid to Turkey. These planes will be used by Turkish pilots trained in the United States to train additional personnel in Turkey.—Turkish Information Office.

JAPAN

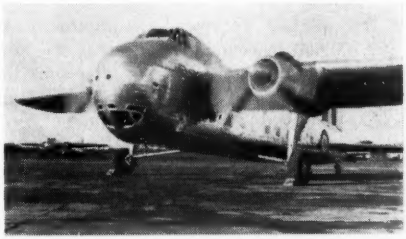
Islands Returned

The Japanese Foreign Office has announced the return of seven small islands off southern Japan. The islands were detached from Japan in 1946 by the occupation powers.—News release.

NEW ZEALAND

Bristol Freighters

The first of a number of Bristol *Freighters* has been delivered to the Royal New Zealand Air Force (RNZAF). These



The RNZAF's first Bristol *Freighter*.

Freighters are of a nonstandard type developed especially for the RNZAF. They are equipped for casualty evacuation, supply dropping, freight transport, air and sea rescue, and troop transport.—News release.

ALASKA

Polar Jet Route

An Alaskan airline has put in its bid to fly jet-propelled airliners over the North Pole from Alaska to Europe.

A spokesman for the airline said that a jet transport plane could fly the 3,200 miles over the Pole from Fairbanks to Oslo, Norway, in 5 to 6 hours, at a cruising speed of 475 to 500 miles an hour.

However, he added that the request to the Civil Aeronautics Board for an over-the-Pole certificate represented long-range planning and that regular flights over the Pole probably could not be made before 1956.—News release.

BOLIVIA

Argentine Loan

Argentina has granted a loan of approximately 36 million pesos (about 2½ million dollars) to Bolivia to continue work on the Yacuiba-Santa Cruz and Sucre-Boyuibe Railways. The roads will link the Argentine and Bolivian railway systems at the border town of Yacuiba and are designed to open rich oil and farming lands in southeast Bolivia.—News release.

GREECE

Economic Aid

Greece has received an allotment of $27,100,000 in economic aid from the Mutual Security Agency. This allotment includes $2,100,000 for the purchase of crude oil and petroleum products from Iran, Saudi Arabia, Bahrein, Kuwait, Iraq, Israel, and Qatar. The rest is to help clear up Greece's intra-European payments position.—News release.

UNION OF SOUTH AFRICA

Navy and Marine Expansion Planned

A plan to increase the Union of South Africa's naval and marine personnel over the next few years, and to extend and develop military training, has been announced by the Minister of Defense. The plan calls for increases in naval and marine personnel and the establishment of a Naval and Marine College.—Union of South Africa Government Information Office.

LIBYA

Financial Assistance

The Western powers are expected to pour nearly 10 million dollars into poverty-stricken Libya during her first year of independence.

This financial aid is expected to come from the United States (2 million dollars), Great Britain (6 million dollars), Italy (about 1 million dollars), and France (600 thousand dollars).—News release.

THE NETHERLANDS

American Tanks

The Netherlands recently received 44 *Sherman* tanks, bringing the number of tanks sent to that country under the Mutual Assistance Program to 170.—News release.

CZECHOSLOVAKIA

Skoda Works Renamed

According to the Prague radio, the Czech Skoda Works will be renamed after Lenin, founder of the Soviet state.—News release.

HUNGARY

Arms Budget

Hungary's Finance Minister has asked Parliament for a 50 percent increase in appropriations for the armed and security forces in the 1952 budget. He called for an appropriation of 6 billion forints (500 million dollars), which represents about 14 percent of the total budget.—News release.

COMMUNIST CHINA

Iron and Steel Production

Pravda reported recently that Communist China had greatly stepped up her iron and steel output over the past year. The Communist Party organ, in a Peiping dispatch, said that the pig iron production for 1951 was double that of the previous year, while steel output was up 65 percent.—News release.

USSR

Population Increase

The population of the Soviet Union has increased by 3 million a year since 1945, according to an announcement by Tass, the official Soviet news agency.

In 1946, Soviet authorities announced that there were 193 million people living in the USSR. An annual increase of 3 million for 5 years would bring the present total to 208 million.—News release.

Morale as an Objective in Warfare

Digested by the MILITARY REVIEW from an article by J. M. Spaight in the "Royal Air Force Quarterly" (Great Britain) October 1951.

WHETHER enemy morale was a profitable objective was a question upon which the American and British strategic planners did not quite see eye to eye in World War II. The question was discussed at great length at the Casablanca Conference in January 1943. The official history of the United States Army Air Forces states: "American airmen were still confidently of the opinion that, by precision attacks on 'bottleneck' industries, German production could be paralyzed. British bombardment experts, on the other hand, continued to emphasize enemy morale." The decision reached was that the American Air Force should adhere to the system of precision bombing and the Royal Air Force to that of target area attacks. As the United States Strategic Bombing Survey states, the latter attacks were "intended primarily to destroy morale, particularly that of the industrial worker." They supplemented the war of propaganda conducted by radio and leaflet dropping and were designed likewise to undermine enemy morale.

Civilian Morale

It might be said that every act of warlike violence is an attack on morale. In battle, a commander seeks to obtain a decision by destroying the spirit of the enemy troops no less than their bodies and weapons. Their defeat is a blow at the morale of their government. It is, in fact, the normal way of inducing an enemy government to give up the struggle and come to terms. The fighting and slaughter are only means to that end. The enemy leaders' minds have to be influenced in (from the other belligerent's standpoint) the right direction. It is not, however, in such a general sense that attack on morale is to be understood here. Field operations are excluded from consideration. The subject dealt with here is the kind of attack on morale which was alone in question at the Casablanca meeting: that is, broadly, civilian morale.

Two Types of Attack

Attacks on morale, for this limited purpose, may mean either of two different things. The morale that is attacked may be that of the population of the country as a whole, or it may be the morale of that part of the population that is engaged in the industries contributing to the war effort. The purpose of the attack in the former case is to induce a spirit of defeatism in the minds of the population at large, and in the latter to slow down or stop work which is essential to a success-

ful prosecution of the war. Here, again, the ultimate aim in each case is to influence the enemy government and to make it disposed to enter into negotiations for the ending of the war, either because it recognizes that the country as a whole is too dispirited to fight on, or because it cannot hope to maintain the war effort that is needed to ensure a successful issue.

The Practice of Sea and Land War

There is nothing new in principle in the war against morale. Precedents for it may be found in both naval and land warfare, in the practice of which one can trace, too, the distinction between the wider and narrower conceptions of it referred to above. Naval blockade is an example of the wider attack on morale. Unlike the interception of contraband, which is aimed (in principle, at least) at preventing the enemy from receiving supplies utilizable for warlike purposes, blockade stops or tries to stop all sea-borne trade with the blockaded part of the enemy territory, and, in so doing, makes no distinction between war workers and others. It is thus a measure aimed at general morale, though it affects incidentally the enemy's war effort.

It differs, of course, from air attack on morale in that it does not involve direct danger to life and limb for the enemy population, who are to feel the ultimate effect of it. There was, however, a usage of the older war under which attack on morale did involve such personal risk for noncombatants. It was to be found in the bombardment of defended towns by land artillery. It is specifically recognized in the chapter on the usage of war in the British official manual of military law. This states: "No legal duty exists for the artillery force to limit bombardment to the fortifications and defended borders only. On the contrary, destruction of private and public buildings by bombardment has always been, and still is, considered lawful, as it is one of the means to impress upon the local authorities the advisability of surrender." In case it might be thought that it was not contemplated that the inhabitants of the defended town would themselves be exposed to danger, for they might have been evacuated, a later provision of the same rules states that the commander of an investing force is under no obligation to allow noncombatants—women, children, aged, sick, and wounded—to leave the besieged place. The circumstances are, in fact, comparable, at first sight, with those in which air attacks are made on an urban center for the purpose of influencing the inhabitants' morale.

However, there is the important difference that in the latter case there is no question of enforcing the surrender of the town, where, as is normally the case, fighting by ground forces is not proceeding at the same time within it (see the reference to Rotterdam, later). The purpose in strategic air bombardment is to destroy military objectives; that, as will presently be shown, is what is claimed by the attacking belligerent, and claimed in most cases in perfectly good faith. The difference is not of theoretical importance only. There has been, in strategic air operations, no disposition to claim that the usage of land warfare referred to above justifies the bombardment of all parts of a town. On the contrary, it is implicitly admitted that that usage does not apply to air attack; if it did, there would be no reason to aim at military targets only.

The 'Ambivalence' of Attack on Morale

Clearly, what the effect of an attack on morale will be will vary with the nature of the government of the enemy country and also with the national character of the enemy people. If the government were a democratic one, the effect might be to induce it to seek the termination of the war either because there was widespread popular pressure to that end, or because the government was desirous of its own

accord to spare the citizens further suffering. That kind of official reaction to the attack on morale is unlikely to be found in a police state. Such a state does not allow popular pressure to be exerted, and has no regard for the sufferings of the people. It is quite a different matter when the morale that is affected is that of the industrial workers. If they are driven to abandon their benches, forges, and assembly lines, the war effort is reduced and the government may be powerless to compel them to return. Thus, a stage may be reached when there is no course but to seek an end to hostilities.

The Human Factor

Whether and how quickly or slowly that position is reached is obviously dependent on the human factor of the problem. The breaking strain will be imposed sooner upon one nation than upon another. It is all a question of ingrained strength or weakness of will, of toughness or pliability. One nation will endure to the end, with head bloody but unbowed. Another will throw in the sponge at an early stage in the fight. Bombing for moral effect, it has been said, is ambivalent in its action; it may sometimes produce negative, sometimes positive, results; it may strengthen morale instead of weakening it. What the effect will be is a gamble in possibilities. There is no cast-iron certainty about the outcome.

Italian and German Morale

The gamble came off better in Italy than in Germany in World War II. Marshal Badoglio has stated that the Italian collapse was due, in part, to the effect on the people's morale of the air attacks on Turin, Milan, and Genoa. In his book, *Italy in the Second World War*, he said: "The people realized that no plans had been made and no steps had been taken to deal with such attacks and that if the war went on all our towns and means of communication would be destroyed. Conscious of our complete helplessness, the morale of the people rapidly deteriorated."

The German civilians were made of sterner stuff. "The mental reaction of the German people to air attack is significant," the United States Strategic Bombing Survey stated. "Under ruthless Nazi control they showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were forced to live. Their morale, their belief in ultimate victory or satisfactory compromise, and their confidence in their leaders declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated."

A French authority's conclusion is this: "If, from the point of view of morale, it was expected that the massive bombardments would induce in the German population a state of apathy, preventing maintenance of the war effort, or drive them to acts of rebellion against the Nazi regime, then the bombardments failed." They did not fail in so far as they deprived the German forces of supplies needed for the prosecution of the war; which means that they succeeded in so far as the aim was military and not simply moral.

War Workers' Morale

That was only to be expected. Bombing that aims at a moral effect only is never likely to be so effective as that which embraces a military end also, if only because the latter can be concentrated; military targets are not to be found everywhere. They are, however, plentiful. The proportion of the civil population of a belligerent country that is engaged in war work is a very substantial percentage of the total population. It was 59 percent of the whole urban population of Germany in the middle years of the last war. If the morale of that part of the population can be weakened as a byproduct of the strategic bombing of

the plants and factories in which the work is being carried on, the morale of the country as a whole will suffer *pro tanto*.

It was the morale of this part of the population which Mr. Churchill had in mind when he addressed a word of warning and advice to the German people before the heavier allied raids began in the third year of the war. He said in his broadcast of 10 May 1942 that we intended to bomb all the cities in which the vital industries of the German war machine were established. "The civil population of Germany," he went on, "have an easy way to escape from these severities. All they have to do is to leave the cities where munition work is being carried on, abandon their work, and go out into the fields and watch the home fires burning from a distance." Again, on 19 May 1943, he said in his address to the United States Congress: "It is the settled policy of our two staffs and war making authorities to make it impossible for Germany to carry on any form of war industry on a large or concentrated scale, either in Germany, Italy, or in the enemy-occupied countries. Wherever these centers exist or are developed, they will be destroyed, and the munitions population will be dispersed."

Indiscriminate Bombing Denied

War on morale as thus conceived does not differ greatly from the war on vital industries which the American air strategists advocated, as stated in the first paragraph of this article. War industries would be the physical objectives; the psychological effect desired would be achieved incidentally. To strike at morale in general, or that of the enemy people as a whole, and without regard to the presence or absence of a military objective in the town bombed, would be to resort to indiscriminate bombardment, and that would be contrary to the declared policy of the belligerents in both world wars: that is, the only great wars waged since air power emerged. A large number of solemn pronouncements on this subject could be quoted. Those made by the British and German Governments in response to President Roosevelt's appeal at the beginning of the last war are the best known; the following additional evidence may also be mentioned.

"During the entire life of the United States Strategic Air Forces I served as Chief of Staff to General Spaatz," Major General E. P. Curtiss stated in a letter to an American military journal in 1949, "and can testify without fear of contradiction that no mission was ever sent out which did not have as its target a vital military objective." The British Air Force, Sir Archibald Sinclair, the Secretary of State for Air, stated in the House of Commons on 29 April 1942, bombed only factories, means of transport, and military stores. An allegation that its attacks were indiscriminate was categorically denied by Mr. Attlee, the Deputy Prime Minister, in the House on 27 May 1943. The German Air Force on its side claimed also that it attacked only military objectives. When Field Marshal Albert Kesselring was being questioned at Nürnberg, on 13 March 1946, about the bombing of towns in Poland, he interrupted: "Not the towns, I emphasize, not the towns." The attacks were, he said, "on military targets: airfields, staff headquarters, and traffic centers were attacked." He denied that the bombing of Warsaw, Rotterdam, and Coventry were terroristic; in bomb dropping, he pointed out, there is often a good deal of deviation.

Attacks Against London

The German attacks on London, in the autumn of 1940, seemed to many of us who witnessed them to be indiscriminate. It is doubtful whether they were intentionally so. The official British account of the civil defense of this country in 1940-41 states that the raids were "aimed at the docks at large, at the administrative and commercial centers, and at some big areas containing complicated railway systems. It may

be open to question whether as a general policy he (the enemy) aimed at hospitals and public buildings, but he often hit them." Practice may not have conformed to precept in all cases, but it was probably true that sheer terrorization or the indiscriminate bombing of civilians for the purpose of weakening their morale was not the deliberate policy of any of the belligerents.

The Atomic Raids

Alike in Germany and in Japan, the strategic bombing offensive conducted by the allies in the last war was largely a matter of city burning. The United States Strategic Bombing Survey found that 75 to 80 percent of the urban destruction in Germany was due to fires, not to explosions, and in Japan the percentage so attributable cannot have been less; by far the greater part of the destruction there was caused by the incendiary raids which started in March 1945. The fire raids were aimed in part, at least, at morale, and in so far as they were they had, on the whole, results that were disappointing to those who had nursed perhaps excessive hopes for this form of strategy. Among these was the late General Smuts. In a national broadcast from Pretoria on 4 September 1943, he referred to the massive air offensive that was beginning against the German industrial centers. "If," he said, "German internal morale broke in 1918 when Germany was intact and had escaped all the ravages of war which she had inflicted upon her neighbors, how long will she endure a devastation worse than that of the Thirty Years' War? The fortress of Europe will disappear physically before the onslaught by night and day. And its effects on civilian morale will be even more devastating than its physical effects."

Psychological Bombardment

Actually, as we know now, the effects on civilian morale were by no means as great as expected. Only in Japan, and only at the eleventh hour, did the results seem to justify psychological bombardment. The atomic raids of August 1945 were definitely aimed at morale. That fact is clear from the statement of Mr. H. L. Stimson, who, as Secretary of War, was the immediately responsible authority. In his book *On Active Service in Peace and War*, he said, "I felt that to extract a genuine surrender from the Emperor and his military advisers there must be administered a tremendous shock that would carry convincing proof of our power to destroy the Empire. . . . The atomic bomb was more than a weapon of terrible destruction; it was a psychological weapon." It certainly seemed to have an immediate effect in bringing the war to an end, but whether it was the real cause of Japan's surrender is exceedingly doubtful. She could not have gone on much longer in any event. Admiral of the Fleet Viscount Cunningham of Hyndhope has written: "I think Japan would have surrendered without either invasion or the use of the atom bombs. I consider now that it was a pity and a mistake that we ever dropped them." Still, it seemed at the time to have given prompt results.

A New Lease on Life

It is hardly deniable that, by entering into the war at the eleventh hour, the atomic bomb gave psychological bombing a new lease on life. Such a strategy probably would have been written off as a failure if the bomb had not been dropped, it would have been criticized for failing to produce the moral effect expected of it and for producing a military result in the shape of a reduction of war production too belatedly to be of very much value. Marshall Andrews, an American writer, has gone so far as to assert that strategic bombing was "moribund" by the end of the war when it "unexpectedly received a revitalizing shot in the arm; the atomic bomb put it back on its feet." That is an unbalanced judgment. There was more in strategic bombing than the attack on mo-

rale of which the atomic bombing was the climax. It embraces not only the raids on the cities—and some of these were militarily very profitable in reducing war production—but also those on oil and transportation targets, which were by common consent not failures in any sense; they contributed in a high degree to the allies' victory. Still, the fact remains that the atomic raids did go some way toward rehabilitating the reputation of strategic bombing as an agency for enforcing a decision by attacking an enemy's morale.

Morale as an Objective in Future Warfare

It is hardly surprising that the events of August 1945 should have inspired the belief, rather uncritically accepted, perhaps, that what the atom bomb achieved against Japan could also be achieved against the Soviet Union in a future war. War on morale came back strongly into the limelight. The advocates of it were quick to point out that if it had not fulfilled expectations during the war as a whole that was because the old-fashioned bombs had had to be used up to the last moment; the atom bomb could be used at once in a future war and the whole situation would be transformed. Material and moral effect now could be achieved with lightening rapidity, and the war would be won before it was well begun. How far the new bomb will have that effect and whether it will in fact be used at all in the future are questions which could not be adequately dealt with within the limits of this article.

Commando Classroom

Digested by the MILITARY REVIEW from an article in the "Canadian Army Journal" August 1951.

This article was prepared by the CANADIAN ARMY JOURNAL from information supplied by the United Kingdom Information Office, Ottawa, Canada. The illustrations used are British Official Photographs. Crown Copyright reserved.—The Editor.

WITH the experience gained from the successful employment of Commando units during World War II, the British Army is continuing to train men for this type of guerrilla warfare at the Commando School at Bickleigh, outside Plymouth.

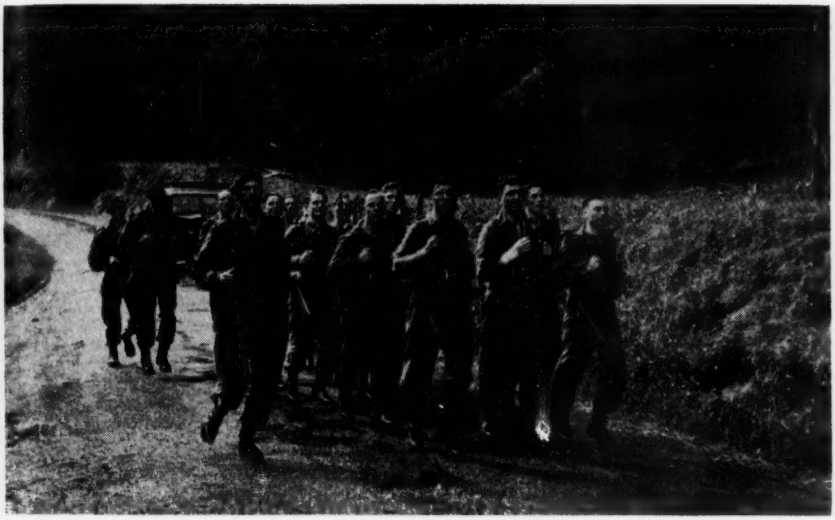
At Bickleigh, Commando veterans are taking special courses side by side with the young soldiers who have volunteered for Commando training during their period of compulsory National Service.

The young Royal Marine Commandos (distinguished by the blue beret and dagger badge) who have joined Commando units since World War II already have seen service in Tripoli, Egypt, Jordan, Malaya, and Hong Kong. These men are now taking a specialists' course in climbing—not the "firemen's slide" type of thing which every Commando recruit has to master in his first few weeks, but the infinitely more dangerous work of climbing rock chimneys, cracks, and pitches without the comforting aid of a climbers' rope.

On the steep crags of Dartmoor and on the storm-lashed Devon coast, Royal Marine Commandos are learning how the many aids by which mountaineers have conquered the most intractable peaks can be applied in warfare, and more particularly to the Commandos' specialty of night landings on enemy-held coast lines. The more rugged and inhospitable these cliffs, the greater is the Commandos' advantage in surprise.

Even Commandos have their classroom training, for they must learn how to take care of themselves in any situation, and how to handle the various items of equipment which they use in their specialized type of combat. Above, Commandos receiving instruction in climbing and mountaineering gear. Below, students receiving instruction in Judo.

Above, swaying 50 feet above a stream, this Commando is trying "regaining" drill with a full pack during a physical training exercise. Below left, a Commando learning how to wire a door latch so that it will detonate a booby trap when lifted. Below right, the "death slide" is not as bad as it sounds, but the rapid decent can be unnerving.



Above, Commandos participating in a 9-mile speed march over Dartmoor. After completing a speed march, which normally takes about 95 minutes, the Commandos are required to do a few rounds of target practice before "taking a break." Below left, a Commando climbing a cliff. Below right, a Commando participating in a night training raid.

As Marines, the Commandos are particularly at home at sea, and Plymouth Sound—near the Commando School—provides many excellent locations for practicing rocky landings. Above, Commandos transferring to a small powered dory during a landing operation. Below, the cliff leader is first ashore from the dory during the rocky landing practice.

Mobile Defense

Translated and digested by the MILITARY REVIEW from an article in "Allgemeine Schweizerische Militärzeitschrift" (Switzerland) May 1951.

DURING the last year and a half of World War II, there was a great deal of talk in the German press, on the German radio, and in the communiques of the *OKW* concerning a new concept of combat—mobile defense—in the German Army. At first, this concept was received with interest, then with doubt, and, finally, with a smile. The term "mobile defense," from the German standpoint, was a contradiction in itself, for, according to the tactical principles of the German Army, there was only one kind of defense—that which received the attack of an enemy in a particular area, and held that area to the end.

Therefore, strictly speaking, there was no such thing as a mobile defense.

Trading Space for Time

In a mobile defense, the possession of terrain, or its seizure, played a secondary role, except in such cases where that terrain was a basic requirement for the retention of one's own, or the destruction of the enemy's, combat capacity.

In this connection, it is interesting to note that the concept of mobile defense came into being during the fighting on the Eastern front, at a time when two of the conditions which are typical of this method of fighting first appeared, namely, a great deal of space and very few forces.

False Conclusions

Out of the successes which were won by using the concept of a mobile defense, many persons had drawn the false conclusion that the recipe for victory for the numerically inferior force was through the use of this type of fighting. The ancient saying that "God is with the strongest battalion" seemed, finally, to have lost its value.

However, as a matter of fact, the mobile defense that was being discussed at that time was only a last resort for the numerically inferior force. It lacked the essential characteristic of Clausewitz's idea of defense: the capability for launching a powerful counterattack, which, in his opinion, made the defense the "strongest form of warfare."

A Temporary Condition

Mobile defense is not an operation. It can never be anything but a temporary condition which must, as quickly as possible, be replaced by the classical form of defensive action. This point has been illustrated many times in the history of warfare.

Although, even after the catastrophe of Stalingrad, many German victories were won within the framework of the so-called mobile defense, such successes were due only to the outstanding qualities of the German soldier and his commanders.

Mobile defense is a method of fighting with small resources and improvisations. Its aim is to delay or prevent a disadvantageous decision, but it is incapable of forcing a decision of its own. Action designed to force a decision requires forces —namely reserves.

Operational Characteristics

Let us now take a look at the fighting during the winter of 1942-43 and note the characteristics of the operations which were included in the concept of mobile defense. These were:

1. Attacks by a numerically superior enemy.
2. Break-throughs by the enemy.
3. Interception of the enemy's attack in the depths of the position and the blocking of the attack on its flanks.

4. Destruction of the enemy forces which had broken into or through the defense positions.

5. Counterattacks to stop an enemy attack directed toward, or to drive him from, a decisive terrain feature.

6. Enforcement of the enemy withdrawal.

Requirements for Mobile Defense

However, mobile defense is possible only when:

1. Space can be surrendered without decisive results.

2. Conditions permit the movement of the defense forces; that is, when weather, roads, and enemy air power do not restrict or influence the movement of the defense forces.

3. The defense forces are equipped for mobile action; namely, by the use of motorized or mechanized forces.

4. The defense force commander is able to act, improvise, and command at lightening speed, unhampered by interference from higher authorities.

5. The counteractions of the defense force—either through a choice of time, place, or conditions, or a combination of those factors—are able to obtain a temporary superiority over the attacking force. For example, when the defense force is able to catch the attacking force off guard so that there is no chance for counteraction from the attack forces, or when the defense force is able to engage the attacking force when it has few reserves to influence the battle.

'Capsule Accounts'

In the following paragraphs, two examples are given from the fighting on the Eastern front during the winter of 1942-43. They are capsule accounts, which, when lifted out of the major actions, fit into the general pattern of defensive warfare. However, they have this feature in common, namely, that a numerically inferior force was able to beat a numerically superior enemy force, and that the fate of the major formations depended on the success of the smaller units, because in all cases additional large reserves and resources were not available to influence the battles.

First Example

On the morning of 16 February 1943, the German 384th Infantry Division, after weeks of retreat fighting, finally reached the Mius River and started to prepare defensive positions. The division, with a strength of approximately 2,500 men, had a front of 12½ miles to defend. The main defense line—the west bank of the Mius—was weakly occupied and had practically no depth. The division reserve, which consisted of only two companies, had to be moved that night to the left of the line, because the enemy had crossed the Mius at that point with tanks.

Early on the morning of 18 February, while the division was still preparing its defense positions, two Soviet companies attacked across the frozen Mius in the division's defense sector and threatened to seize an important observation point about a mile behind the lines.

While the battle for the observation point was still in progress, the sector reserve—a force of only eight men—worked its way forward and counterattacked the enemy force. The sector reserve opened up with its machine gun and machine pistols from the right and the rear and caught the enemy force by surprise, killing 61 of the attackers and forcing the remainder of the force to flee across the Mius. In this action, the sector reserve had only one man wounded, and the total casualties for the division included two killed, three wounded, and five men taken prisoner.

Second Example

On 17 February 1943, the German 79th Infantry Division (the unit on the right

flank of the 384th Division which was discussed in the previous example) was attacked by a Soviet force just as it was completing its defense positions. The Soviets, with the aid of tanks, opened up a breach 5 miles wide through the 79th Division's line, into which poured a Soviet armored corps. Although the 79th Division was unable to halt the penetration, it was able to prevent a further widening of the breach. During the night of 18-19 February, a weak combat team from the German 23d Armored Division, which was engaged farther south, attacked the rear areas of the Soviet column, setting the corps' fuel convoy on fire during the action. On 19 February, the 79th Division was able to close the breach in its lines, thereby cutting off the retreat route of the Soviet corps. The Soviet armored corps, immobilized because of a lack of fuel, eventually was annihilated by the Germans.

In the two examples discussed above, a numerically inferior force won a victory over a numerically more powerful enemy; and in each of the examples, the fate of the major formations depended on the success of the smaller units.

Conclusions

If we must draw conclusions from these operations, it may be said that the application of the concept of the mobile defense belongs to the lower levels of command. The higher command cannot attempt to determine solutions beforehand, by means of previous directives and orders. The primary role of the higher command in such a situation is to provide mobile reserves for the actions. In this regard, the high command must make sure that such reserves are not committed where they will become involved in frontal fighting, but it must not hinder the freedom of action of the reserves.

Neutralizing the Horde

Digested by the MILITARY REVIEW from an article by Air Marshal Sir Robert Saundby in "The Aeroplane" (Great Britain) 2 November 1951.

IF WE look around the world today, we find much cause for dissatisfaction. In the East, irresponsible politicians are urging their peoples to clamor for foreigners to clear out of their countries, and stop interfering with them or even helping them. Some are even inciting their peoples to mob violence.

The Frenzied Crowds

The ignorant and illiterate crowds that yell slogans and do not hesitate to insult, rob, and ill-treat Europeans have no idea what they are doing. They are led to believe that the foreigner is "exploiting" them, and that if they can get rid of him they will in some way become freer and better off. They are never allowed to suspect that such freedom and prosperity as they now enjoy are the direct result of foreign capital investment, foreign technical aid, and sometimes foreign assistance in the administration of their country. Still less do they realize that, when the foreigner goes, the only increase of freedom will be that of their own rulers to oppress them, and the only people who will be better off will be their own politicians and administrators.

It is sad for Britain to see, one after another, leading personalities friendly to this country murdered by fanatics and extremists, who are worked up to frenzy, no doubt, by carefully camouflaged agents of

our Communist foes. General Razmara, King Abdullah of Jordon, and Liaquat Ali Khan—all are gone because they stood for moderation, order, and friendship with Britain, and thus barred the way to Communist expansion.

Communist Influence

And signs are not lacking that similar troubles will arise in Africa unless something is done to stop this expansion.

Troublesome as these things have been and still are, and although we have suffered serious economic injury and loss of prestige, it is not the intransigeance of Eastern politicians nor the rise of so-called Eastern nationalism that today lie at the root of the troubles of the Western world. None of these problems is insoluble or even intractable, when tackled in the right way by men who have some idea of what they are doing.

The underlying cause of the widespread despondency and fear of the future, the deep feeling of insecurity that pervades all the free world, spring from the fact that the aggressive Communist powers of the Soviet Union and China dispose of enormous manpower, organized into vast armies.

Greater Potential of Resources

Of course, we realize that we have far greater potential resources than the Communists. We know that we are better organized, have far more industrial power at our disposal, and are greatly superior in skill, craftsmanship, and inventive genius. We are convinced that they cannot match us in the air, although they may outnumber us. We believe that their rigidly controlled police states, founded on terrorism and falsehood, cannot compare in moral strength with our democratic system, which, for all its imperfections, is founded on freedom, truth, and justice.

Yet, we fear that the Asiatic horde, following in the footsteps of Ghengis Khan, may overrun the free world except for the continent of America and that nothing could stop them. We cannot raise land forces on the scale needed to halt their onrush, and if we tried to do so, it is almost certain that our armies would be overwhelmed by sheer mass. They would be encircled and destroyed in a disaster that would shake the foundations of the Western world.

Air Forces the Answer?

Up to now, we have had to pin our faith on the deterrent powers of our air forces. However, if the horde were set in motion, could we depend on their ability to destroy the essentials of Communist military power by a lavish use of atom bombs? Even if, as I believe, this could be done, would it stop the Communist armies from overrunning Europe and the Middle East?

It may well be that strategic bombing, carried out by modern bombers carrying weapons of undreamed of power, could defeat the Communists in a much shorter time than our past experience would lead us to believe. However, the greatest optimist would not expect it to do so in a matter of days. It would be weeks, and perhaps months, before the heart ceased to beat, and the tentacles fell limp. In the meantime, the Communist armies would have spread far across Europe, looting and burning, rounding up and butchering our friends, and laying waste the land. Liberation would come, but it would come too late to avoid hideous damage and slaughter.

It is this dreadful possibility which saps the morale of continental nations, paralyzes their will to rearm, and makes some of them doubt the wisdom of even attempting military defense. They derive poor comfort from the thought that Western air power will rescue them after they have been ravaged.

A New Weapon Required

For these reasons, I believe that the

most vital problems facing the Atlantic Treaty powers and, indeed, the whole free world, is the discovery of some method of warfare that will render ineffective the vast Asiatic horde. It does not require much imagination to see the momentous changes that would occur for the better in our situation if we were able to banish this threat.

At one time, we hoped that tactical air forces would be able to destroy, or at least disorganize, huge but simply equipped land forces. The lesson of Korea shows that, with the weapons they now possess, such hopes are largely illusory. Even on the open plains of North Africa, their power of destruction against troops, as distinct from matériel, proved to be limited.

Against great armies, a most potent weapon from the air is gas. It is a weapon of tremendous power, against which it is very difficult for troops to defend themselves. Even as long ago as the twenties, the late Major General R. J. Collins, then commander of the 7th (and only) Armoured Brigade, used to say: "One aeroplane, equipped with mustard gas spray apparatus, could put one infantry brigade out of action in one minute."

However, all forms of chemical warfare are banned by international agreement. When Germany first used gas for warlike purposes in 1915, a wave of horror swept the civilized world. It was stigmatized as inhumane, even bestial, and wholly immoral. There is no need for us here to go into the rights and wrongs of this. The fact is that this feeling of revulsion was strong enough to cause the powers, assembled in the League of Nations, solemnly to renounce the practice of chemical warfare. The Soviet Union, alone, did not ratify the agreement and, between the two world wars, maintained an organization known as "Osoaviakim," the association for the promotion of chemical and air warfare. However, even the Soviet Union, when World War II came, did not resort at any time to chemical warfare.

Even supposing we were tempted to take steps to set aside the agreement, with due legal form, there are many repercussions of such action which would have to be carefully considered. And if, on balance, it appeared advantageous to the free world to make use of gas, it would take a lot of moral courage to set aside the agreement. I cannot see the Western democracies taking this line, and I, therefore, think that we must regard gas as "barred."

Effectiveness of Atomic Weapons

It is against this background that new atomic weapons in the United States must be seen. Not long ago, Mr. Gordon Dean, chairman of the United States Atomic Energy Commission, gave evidence before an appropriations subcommittee of Congress. He said that a whole new range of atomic weapons was now being developed, and that these would include "artillery shells, guided missiles, torpedoes, and rockets and bombs for use by ground-support aircraft." He said that we had now reached the stage at which we could contemplate using atomic weapons on a battle front. He declared that "given the right situation and a target of opportunity, an atomic bomb could be used today in a tactical war against enemy troops in the field, military concentrations, near-combat areas, and other vital military targets, without risk to one's own troops."

Here is the possibility of smashing up, from the air, concentrations of troops long before battle has been joined. Dumps, communications centers, and "other vital military targets" could be destroyed with a completeness hitherto unknown.

Does this give us hope that air power has now a range of weapons which will enable it to destroy the backbone of Communist military might—the horde? Does it perhaps mean that the day of great manpower armies is over, and that they are

soon to be as obsolete as that other manifestation of unskilled manpower—the teeming fleets of slave-propelled galleys of ancient sea power?

I do not know; but if it does, it will go a long way to solve our problems, and to maintain the peace of the world. It would convert the horde, from a terrible threat to which we can find no answer, into a liability to its owners—a mere collection of human beings doomed to futility and death.

Then, indeed, we should have accomplished a great stride forward along the road which leads to durable peace and a sane, tolerant world order. We should have put the reins of power back into civilized hands fit to hold them, and found an effective curb with which to control the forces of evil.

Hope for the Future

With the disappearance of the threat from the horde, Europe would recover her morale and her balance, tension would relax, productivity would rise, confidence in the future would be reborn, and, eventually, expenditure on armaments would be bound to fall. Air power would, more than ever, become the supreme and dominant force in warfare. No nation, or groups of nations, can hope to match the air power which the North Atlantic Treaty Organization could have at its command. Thus, the peace of the world would be in safe keeping, and we should climb steadily upward toward our goal of an ordered, peaceful world.

If we can keep the peace for 10 or 15 years, the danger of world war may well have passed away—for the Communist empire is not built upon sound foundations, and contains within itself the seeds of its own destruction. The evil may pass; and, as Mr. Churchill said recently, "a new breeze may blow upon this troubled globe."

The Atom on the Battlefield *

Digested by the MILITARY REVIEW from an article by Sebastian Haffner in "The Canadian Military Journal" Christmas 1951.

WHEN the first Soviet atomic explosion was announced from Washington in September 1949, the effect on public opinion in the West was very serious. However, the latest announcement hardly made front page headlines.

Of course, this is due to the fact that the first explosion meant the breaking of the American atomic monopoly and, therefore, an important change in the world situation. The second explosion only confirms and develops an existing situation. However, there is another and more significant reason for the difference in public reaction. It is that during the last 2 years thinking about the potentialities of atomic weapons has generally sobered down, and a sense of proportion has been regained.

The mental and moral shock-effect of the atom bombing of Hiroshima and Nagasaki was hardly less severe in America and Europe than in Japan itself; perhaps, it was stronger.

Millions of people rushed to the conclusion that the "absolute weapon" had been discovered and succumbed uncritically to a notion that any future war, if fought with atomic weapons, was bound to result in universal destruction.

This idea was reinforced by the fact that

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Japan's surrender followed the dropping of the two atom bombs. Hardly anybody stopped to think that Japan was already decisively defeated and on the point of collapse when the bombs were used. The bombs were not as much the *cause* of the Japanese surrender as they were the *pretext* for the peace party which the Japanese knew had become necessary in any case.

Orthodox Forms of Warfare Obsolete?

For years afterward, people remained in a mentally shell-shocked state as far as atomic weapons were concerned. They hardly questioned the idea that a war fought with atomic weapons by both sides spelled the inevitable end of civilization if not of the human race, and that all of the more orthodox forms of land and naval warfare had become obsolete.

From this general state of mind there resulted two ideas which dominated even serious political and strategic discussion in the early postwar years. First, that the American monopoly of atomic weapons, while it lasted, constituted an absolute deterrent and provided, by itself, a sufficient balance of power against the Soviet land armaments. Second, that international control of atomic energy was the essential condition of future peace and human survival.

Gradually, these beliefs were modified in several ways. First, closer investigation has shown that the destructive effects of the atom bombs, though certainly serious, are not as immeasurable as had at first been thought. The postwar bombing surveys in Germany and Japan proved that many of the "orthodox" air attacks with high-explosive and incendiary bombs had been more destructive—both to buildings and human lives—than the atom bomb attacks on Hiroshima and Nagasaki. In fact, it has been estimated that it would take at least 400 atom bombs to do the equivalent of the damage inflicted by "ordinary" bombs on Germany during the last war, and this damage had not, by itself, been enough to defeat Germany. Nor is it easy for any power to produce and deliver 400 atom bombs.

Defense *versus* Offense

The fear of "absolute weapons" revived when the possibility of a hydrogen bomb was revealed. However, the hydrogen bomb does not yet exist, and it is not certain whether it will come into existence before new defensive developments have made the delivery of any kind of bombs over long distances even more difficult.

Here is the second reason which has begun gradually to reduce the world-wide panic:

Defensive developments, both in the sphere of radar and of guided missiles, have in the last year or two begun to shift the balance between attack and defense of strategic air warfare in favor of the latter. During the last war, air defense was considered to do well if it destroyed between 5 and 10 percent of an attacking force. Today, some unofficial but fairly authoritative American estimates put the probable rate of destruction at 30 percent. This means that a bomber force would be totally destroyed after about three missions.

However, with the expected full development of the automatic homing devices to be fired, both air-to-air and ground-to-air, there is a very serious expectation in expert circles that in a few years' time the destruction rate will approach 100 percent, and that, practically speaking, the bomber will no longer get through. If this expectation proves true, it will mean the end of strategic air warfare whether with ordinary bombs, atom bombs, or hydrogen bombs.

Tactical Use of Atomic Weapons

A new development is working from the opposite starting point in the same direction—the development of atomic weapons for tactical use on the battlefield, that is,

small atom bombs to be delivered by light aircraft, ground-to-ground missiles with atomic warheads, and atomic artillery shells. Obviously, no one would want to destroy enemy cities and kill enemy civilians if he could win a war by destroying enemy armed forces. In addition, if the long-range bombing of cities becomes hazardous and almost suicidal, with only an outside chance of getting an occasional bomber through at prohibitive costs, there is a double argument for returning to the orthodox method of waging war—aiming at the destruction of armed forces rather than at the destruction of the civilian rear of an enemy country.

All these developments are still incomplete, and there is little doubt that if a world war broke out this year or next there would be large-scale atomic attacks on big cities. However, if the next few years pass without a world war, it is highly probable that a future war will be fought chiefly on the battlefields, and that the civilian population in the rear areas will suffer less from bombing than it did in 1939-45.

If this is true, two things follow. First, international control of atomic energy loses some of the urgency it seemed to have 5 years ago; civilization may survive even the addition of atomic weapons to the national arsenals of sovereign powers. Second, "ordinary" orthodox armaments—first-class armies, navies, and air forces—will be as important to national security as they ever were, although their tactics and techniques may be revolutionized through the introduction of atomic and other new weapons into tactical warfare.

The Future Mobility of Armies

Translated and digested by the MILITARY REVIEW from an article in "Militaert Tidsskrift" (Denmark) December 1951.

SINCE we are currently engaged in increasing our defense and making decisions relative to matters of mobility and supply, it is worth while to take a look at existing conditions in foreign armies, and also to consider their future plans and expectations. Naturally, we cannot simply copy the systems of the major powers nor make their views a basis for our own future development. However, by observing what others have done or are doing, we may be able to increase our efforts to do what we can for our future system.

For example, the American Army, not satisfied with the mobility which was achieved during World War II, is taking steps to improve its present equipment and techniques, in order to capitalize on this important aspect of modern warfare. In this regard, it has shown great interest in airborne forces and air supply, and has accepted the following requirements as being necessary to attain greater freedom of maneuver in those fields:

1. More suitable air matériel.
2. Lighter weapons.
3. Supply by air.

More Suitable Air Matériel

As regards the first requirement—more suitable air matériel—many changes have been made, and many changes are anticipated for the future. As an example, gliders already are regarded as obsolete for use in modern combat operations. It is recognized that the losses of matériel of this type are so great that even a major power would be unable to maintain such equipment at full strength, if extensive, large-scale airborne operations were anticipated. Therefore, the Americans have developed assault aircraft—gliders with

engines—to overcome many of the problems posed by the use of gliders. Assault aircraft can land and take off on practically any piece of level terrain, carry heavier loads, and provide greater mobility and speed.

Another recent development which has proved its advantages in combat is the helicopter. In Korea, the Americans have used helicopters for evacuating wounded personnel, transporting supplies and equipment, liaison, and other varied missions; and future plans envisage even greater use of such craft. The strategic mobility of air-landed forces has never been questioned, but their tactical mobility, after landing, is not on a level with that of normal ground units. However, in the future, this disadvantage is expected to be overcome through the use of large transport-type helicopters which would be capable of bringing in heavy equipment, and large reserves of personnel.

In addition, in a slightly more distant future, we may expect to see the so-called "converti-plane," which will combine the versatility of the helicopter with the speed and range of a conventional airplane.

Lighter Weapons

At the present time, the paratrooper jumps with equipment which weighs between 55 and 110 pounds. After landing, he takes over additional weight in the form of heavy weapons which are dropped in special containers. However, weight is not the only factor involved. It was proved, during the last war, that the psychological effect of battle reduces the physical strength of combat troops. Thus, these two factors, when combined, result in tactical immobility.

Reduction of weight is a major problem, especially in airborne operations, but it is being solved. Lightweight weapons, up to 105 millimeter, have been developed which have the same effect and range as the heavier weapons. Moreover, future developments no doubt will provide equally advantageous results in improving mobility on the battlefield.

Supply by Air

The logistical implications of modern warfare have resulted in an ever increasing extension of lines of communications. Because a future enemy will undoubtedly make use of partisans, thereby threatening the security of long lines of communications, we must attempt to find a solution to the logistics problem. This solution may be found in either of two courses of action: providing protection for extended lines of communications, which would swallow up a large number of forces; or by replacing the present form of lines of communications through the use of air supply. Air supply would not only reduce the number of troops required to maintain the lines of communications, but would offer further savings in the form of logistical support required by such troops.

Some people may call these ideas "dreams of the future," which, perhaps, will never be realized. On the other hand, few people, 25 years ago, envisaged the possibilities of airborne operations on the scale of those witnessed during the last war, or of the possibility of supplying a city the size of Berlin by air. Therefore, let us continue our "dreams" a little longer and try to imagine the possibilities of a commander who has airborne and air supply forces at his disposal. Combat with reversed fronts will present no more problems than the present single fronts which face the enemy. Fortified lines will be of little significance, because armies could pass over such lines and land in the vicinity of their objectives.

In short, improvements in equipment and techniques will give the commander of the future a decided advantage over an enemy employing presently known methods of warfare, because he will be like a chess player, merely jumping over a pawn.

Denmark's New Territorial Army

Digested by the MILITARY REVIEW from an article by Major A. N. Hvidt in "The Services and Territorial Magazine" (Great Britain) October 1951.

THE Kingdom of Denmark joined the Atlantic Pact defense scheme in 1948. Consequently, her armed forces have become a link in the chain where His Britannic Majesty's forces play such an important part. In Denmark, the development of the British defensive preparations is being watched with the keenest interest and the efforts to reestablish the British Territorial Army is studied particularly by Danish Territorial Army people.

The Danish Territorial Army, as raised and developed after World War II, has many similarities with England's Territorial Force when it was reorganized in 1921, as The Territorial Army of the United Kingdom. In many ways, also, the Danish organization is very much like the English Home Guard from 1940 to 1944.

Much inspiration and many "good ideas" have been imported from England's Territorial Army to the brother organization in Denmark.

Territorial Army Needed

A complete co-ordinated territorial defense scheme did not exist in Denmark before 1946. Throughout her history, territorial units of volunteers have been raised and disbanded in all parts of the realm. However, two world wars seemed necessary to make it clear to the Government that armed forces that could be mobilized practically within an hour had to cover all parts of the Kingdom and be run independently of the more slowly mobilized army of National Service reservists.

That such an army could only be established with powerful Government support behind it (propaganda, equipment, training accommodations, and instructors) also had to be realized at the same time.

Only a few of the old volunteer corps had been able to survive the economic crisis that arrived whenever the first enthusiasm (mostly inspired by a German aggression or the threat of an attack) cooled down.

Conscription in Denmark

Conscription was introduced in Denmark in 1803—originally comprising the peasant class only, but from 1849 (during the war against Germany 1848-1851) it was extended to every physically fit young man in Denmark. The regular forces would—in case of war—call up 20 classes (annual National Service intake), which means that no man between 20 and 40 could devote himself to any voluntary service because in case of war he belonged to the regular army and navy.

Volunteer Corps

Nevertheless, when World War I cast its shadows over Europe a patriotic movement all over the country led to the raising of bicycle-corps of volunteers too old for the army reserve, all armed with machine guns. These units were raised in almost every county and specialized in great fire power combined with quick movements (bikes or even motor bikes).

Local Defense Companies

On top of these units, members of the local rifle clubs at the same time formed local defense companies to guard railways, bridges, harbors, and other installations and facilities. They had no uniform (an arm band only) and were armed mostly with inefficient weapons, but they were everywhere. Although they could be considered as ineffective in case of war (they never drilled!), they can call themselves

the ancestors of the present Danish Territorial Army (or Home Guard).

Underground Army

During the German occupation 1940-1945, an underground army was formed in Denmark, mainly equipped with British and Swedish arms and ammunition, smuggled or parachuted into the country. These enabled the resistance army to carry out a very important part of the strategic fight that had been left to the occupied Denmark, for instance, the railway sabotage that actually ruined the German troop movements from Norway to Normandy during the critical Caen battle in 1944.

Apart from this activity, the resistance forces became organized and trained with a view to an attack in the rear of the German Army if an allied invasion had taken place on Danish territory.

However, the Germans surrendered just as the British 21st Army Group reached the Danish-German frontier in May 1945. As His Danish Majesty's regular forces had been wiped out completely, the resistance army, plus one brigade of Danish patriotic refugees that had been raised in Sweden and landed in Denmark on 5 May, immediately took over the police duties and mopping-up in connection with the German surrender.

The resistance army immediately started to convert itself into a Territorial Army, having a complete organization all over the Kingdom plus a considerable amount of equipment, and the enthusiasm and the team spirit from the grim days of occupation became an important asset of the new army's morale.

Before the future organization of the regular forces had been fixed, an act was passed through the Copenhagan Parliament which outlined the Territorial Army's first establishment and secured it sufficient economic support, equipment, instructors, and staffs.

Obstacles to Overcome

Many obstacles had to be overcome, particularly as the regular forces simultaneously were having a hard battle to get on their feet again after the German occupation that had meant the loss of every bit of equipment and a terrific shortage of officers through casualties in the resistance fighting, and because of the inactivity of the military academies during the years of occupation.

However, gradually the new Territorial Army took shape and the first objective—armed forces in every town, village, and parish—soon was reached and combined into a firm organization. The task of this "new army" was fixed to form the immediate answer to any *blitz* invasion by land, air, or sea, and to deal with the guard duties at all points of strategic importance.

In this connection, the Danish Territorial is thoroughly trained to deal with any fifth column activity. On top of all this, there is co-operation with the regular forces. Territorial Army units are often exercised as ordinary fighting field units so that they could become reinforcements for the regular forces, if necessary.

Naval Territorial Army

To start with, all units were organized and trained as infantry, but gradually Territorial Army units have been trained as antiaircraft batteries, antitank companies, service units, and, last but not least, a naval branch of the Territorial Army has been raised. It is obvious that a kingdom consisting of a peninsula and 595 islands within its archipelago will claim a naval force, always on the alert and fully cognizant of local coastal geography.

Further information about the organization of the Territorial Army in Denmark cannot be given for obvious reasons, but some characteristic features that can

illustrate its conditions of work may be of interest.

The Territorial Army cannot include any National Service reservist class young enough to be called up to the regular forces in case of war. This means that the main intake consists of men between the ages of 30 and 50, but most units can boast of noncommissioned officers or privates between the ages of 65 and 80.

Up to the present, all enlistments have been voluntary, but the law makes it possible to use Territorial Army conscription or the transfer of old army-trained National Service men in areas where voluntary enlistments have not been large enough to cover the local establishment. Nowhere has such a thing been necessary up to now. Repetitive training of National Service men is not left to the Territorial Army. It takes place through the calling up of the old National Service men to their regular unit.

As in England, the recruiting follows the world political barometer from day to day. At the outbreak of the Korean conflict, long lines indicated where the Territorial Army recruiting offices were located.

A considerable part of the recruits have served with the regular forces. However, among the older classes, many have never been in khaki because the intakes in the years between the two world wars were constantly cut down for reasons of economy.

Consequently, the latter part must go through a considerably more extensive training than old National Service men.

Weekend Training

Most training in the Territorial Army is done on week ends. During the summer, training also is conducted on week days. Summer camps as known in Great Britain are not used for the obvious reason of lack of equipment—mainly tents. However, the Territorial Army has its own officers' training center, where officers and noncommissioned officers attend a 2-week course each year under regular officers' instructions.

According to old Danish customs, officers and noncommissioned officers are chosen by the rank and file, but naturally members that had commissions previously in the regular forces are generally asked to take over the command of the local units. There are, however, areas densely populated with retired officers, where majors and colonels serve as bren gunners under subalterns 30 years their junior. Anybody can get a commission in the Territorial Army and hold it as long as he is sufficiently efficient and enjoys the confidence of his countrymen from the same village or area.

Clean Sheet Essential

Clothing and equipment are permanently issued and kept by the members in their homes. So is live ammunition, with the result that any Territorial Army unit is constantly on the alert and can mobilize within a very short time. Discipline is based on confidence and friendship and on the fact that everybody is doing his bit voluntarily. Breach of discipline is rare, and any serious case means an immediate goodbye to the Territorial Army. Everybody that wants to join is carefully examined, and a clean sheet in every respect has to be produced. So far, no unwanted elements have been enlisted.

Uniform and Equipment

The uniform and equipment soon will correspond to that of the regular forces, with the exception of a color badge that can be discarded in case of mobilization to remove any distinction between the Territorial Army and the regular forces. Therefore, all sorts of textile "flashes" are carefully avoided.

The uniform is khaki with a field cap of an old Danish design. Web equipment

is like the British 1937 pattern, and the individual weapons consist of Swedish *Mauser* rifles, Danish *Madsen* light machine guns and *Suomi* submachine guns.

Signal equipment and all heavy equipment is modern.

The Territorial Army now has settled down. Many years of hard fighting to raise the army from what was originally organized as a resistance army during the German occupation is now over and the "child" is growing up.

The First Blow

Translated and digested by the MILITARY REVIEW from an article in "Ny Militar Tidskrift" (Sweden) No. 7-8, 1951.

IN DISCUSSIONS relative to the possibility of an armed conflict between the East and West, it usually has been assumed that, in such an event, Soviet forces would surge across Central Europe and reach the English Channel during the first phase of the war. It is possible that a major war will have such a beginning, but there is another possibility which is equally important. Both world wars were marked with initial phases in which the aggressor nations moved against small nations which constituted weak links in the defense chain or which stood in the way of the main attack. This was the case with Belgium in 1914, and also with the Baltic provinces (Finland and Denmark in 1939) and Norway in 1940.

It seems as though this method has become even more accentuated as war has assumed its global nature. Small nations which have important strategic positions —such as Sweden in the Baltic and Norway in the Atlantic—now have greater significance as regards future world conflicts. The intensive global dissention continues to spread, and, in the eyes of the principals, the small nations stand out as important components in analyzing potential strengths.

It would be tempting for an aggressor to attack the small nations first, because they would not be able to offer the same type of resistance as the major powers. In addition, if they are located close to the aggressor nation, the temptation is all the greater. Moreover, recent examples from World War II and the conflict in Korea show that an aggressor may attack a small nation for the purpose of testing the political repercussions of such an undertaking.

All in all, small nations lead a far more precarious existance than is usually believed. Their chances of remaining out of a world conflict are decreasing every day.

Some political weather prophets attempt to soothe their fellow countrymen by stating that a new world war will start on the other side of the globe, and that there will be ample time to get ready for war after it has begun. Both of these ideas are improbable. The first blow could fall anywhere; and the small nations are not immune from attack. Preparations for an attack can be concealed effectively, so there probably will be little advance warning. In addition, it is uncertain whether the politically responsible persons would take note of the warning signs. Both of these have been proved by history.

At the present time, the Soviet Union is attentively following the build-up of the North Atlantic Treaty Organization forces, and attempting to find countermeasures in the form of increased freedom

of maneuver in the Baltic area. The Baltic is no peaceful inland sea where storms never come. As a matter of fact, it is an area where major political crises may occur. For this reason, the small nations of this area must maintain a political and military preparedness. The lack of watchfulness or carelessness of action may be followed by serious consequences, if the blow occurs.

A 'Capital' Tank Policy

Digested by the MILITARY REVIEW from an article by Major H. A. R. Bucknall in "The Army Quarterly" (Great Britain) October 1951.

THE intermittent controversy which centers around our tank policy has been described as volcanic. The purpose of this article is to stifle the flames by introducing a fresh element, the "Capital" tank—which might be described as less combustible than the "General Purpose," "Infantry," and "Cruiser" types which normally cause the eruptions.

A Dominating Tank

The case for the "Capital" tank rests upon the truism that first things must come first. Thus:

1. It is folly to concentrate on the means of bringing about battles on terms favorable to ourselves, and on those for exploiting a defeated enemy, at the expense of those necessary to win the battle.

2. Each arm of the service must be superior to its opposite number in men, matériel, and method. This is the basis of the teamwork which wins battles.

It follows then that we need a tank which will dominate the tank battlefield. Using naval terminology, we want a "Capital" tank.

A Need for a 'Capital' Tank

In the last war, the Royal Artillery usually outfought its opponents in the field because it had the better equipment—notably the 25-pounder—without which the skill and bravery of the British gunner would have been wasted. In contrast, and without prejudice to the skill and courage of our tank crews, the Royal Armoured Corps was rarely able to outfight German armor, for the very reasons that the Germans had a "Capital" tank and we did not. The *Mathilda*, in 1940, could be regarded only as a lost opportunity, because, although ahead of contemporary German tanks in many features of design and performance, it lacked the *sine qua non* of the "Capital" tank—the means of destroying enemy tanks at ranges at which it was itself immune.

If this requirement could be met without sacrificing mobility and protection, the characteristics of the "Capital" tank could be reconciled with those of tanks required for other roles—and one "General Purpose" tank for our major tank needs might be a practical proposition.

A tank is required for the armored division role. This tank, which must have strategic and tactical mobility, as well as versatile armament, will be referred to as the "Rover" tank.

A tank is required for the primary role of supporting the infantry, with particular emphasis on protection. It is doubtful, however, in view of the relative power of modern ground antitank defenses, whether such a tank is now practical in the form in which it was originally conceived. However, it is not disputed that the infantry must have direct tank support, when it requires it, in some form or other.

Unfortunately, the essential characteristics of these three types of tanks cannot be reconciled in one tank of modern conventional design. Increased ranges and penetrating power mean bigger guns, which, in turn, require greater space, which leads to increased weight. More weight means less mobility and other complications.

The limited traverse principle offers a means of increasing hitting power at a minimum cost of extra weight. However, both sides can use it and it does not offer more than a stopgap solution to the problem of producing a "Capital" tank which will dominate the battlefield.

Why Not Two Types?

The need for these three different types of fighting tanks which appears to be forced upon us can be reduced to two types—"Capital" and "Rover"—if the experience of the last war is accepted. This proved that both these types can provide adequate support for the infantry, provided that suitable tactics are employed, based on the capabilities of the type of tank used and not on rigid preconceived ideas of how tanks should be employed in support of the infantry.

The Question of Priorities

The need for two different types of tanks raises the difficult question of priorities. It may be argued that we should concentrate on large numbers of "Rover" tanks, because they impose relatively less strain on our overtaxed heavy industrial and shipping resources. It may be claimed, fairly, that a policy which gives priority to a second-best tank is unsound. Moreover, it may be claimed that this would be likely to happen in the case of a "Capital" tank policy, because our tanks (and those of America) are subject to weight restrictions to meet shipping load capacities, whereas those of any potential continental enemy, initially anyway, are not.

The counter argument, which should carry greater weight if related to the situation we are likely to have to face in the opening phases of the next major war, is that we may have no alternative but to give battle on terms dictated by the enemy. "Capital" tanks which can stand up and fight, even if they sometimes come off second best, would serve a more useful purpose than large numbers of "Rover" tanks which, used as a stopgap under conditions for which they are not suitable, would soon be frittered away. The aim, however, must be a "Capital" tank which will come off best—not second best.

The Morale Factor

The morale factor is especially relevant to this aim. The direct influence of a "Capital" tank on operations is obvious. The effect on morale, which in turn influences operations, is worth special note. The morale of troops, particularly the infantry, who normally confirm the outcome of the battle, is probably more susceptible to the fortunes of the armor than to any other arm. The "knocked-out" tank is painfully visible to all those in the forefront of the battle, and the carcass usually remains for all who pass later to see. Apart from this visual evidence, armored inferiority is soon apparent from the reluctance of tank commanders to undertake tasks which will expose their tanks' vulnerability. This soon transmits itself to everyone else and the result is a dangerous loss of the vital will to "get on," or "stand firm," whichever the case may be.

Conclusions

The conclusions which may be drawn are:

1. Possession of a "Capital" tank which will dominate the battlefield should be the basis of our tank policy.

2. The "Capital" tank designed on conventional lines is a separate class of its own which confronts us (and the Americans) with special difficulties with which

a potential continental enemy, preparing for war on his own continent, does not have to contend.

3. The onus rests mainly on our scientists, designers, and engineers. If, given a clear policy and adequate backing, they cannot produce the answer by superior application of known principles and techniques, or if the limit of conventional design has been reached, they must explore new approaches to the problem and we soldiers must go with them. Whether or not the solution lies in improvements on conventional design, or in the introduction of some entirely new form of tank, is immaterial.

Rearmament

Translated and digested by the MILITARY REVIEW from an article by Lieutenant Colonel de Fouquieres in "Revue de Defense Nationale" (France) October 1951.

IN 1945, with the crushing of Germany, the disappearance of the *Wehrmacht*, and the weakness of our hereditary enemy, there appeared to be no *raison d'etre* of the French military. France, suddenly astonished at finding herself so small between the American military might and the Soviet mass, appeared to be desirous of forgetting her destiny of being perpetually coveted, and dreamed of neutrality.

In the face of an Army without prestige, a Navy without ships, and an Air Force without production, public opinion was more responsive to those voices which recommended a lightening of the financial burdens than to those which proposed the reorganization of military forces for national defense.

Until the Korean conflict, the mental confusion existing among the French people, the bitterness resulting from the many hardships which they had endured, and their fatalistic attitude with regard to the future caused few of them to reply with conviction and accuracy to this simple question: "What is the reason for the existence of the French armed forces?"

Even now, in spite of the many official statements and accounts in the press, which daily proclaim the risks that have been run, the Nation is loathe to make any effort for an Army whose mission it does not understand.

A Clear Concept Needed

A clear concept of this mission, through a study of geographic, economic, and political conditions, is needed in order to organize our forces for national defense and to have both the military and the civilians closely united in the same conviction.

However, this conviction is lacking, because, under the cover of the war, the occupation, and the liberation, a strange influence, at first in the guise of patriotism and later hidden behind social demands, was able, with the help of propaganda, to mislead minds already disturbed by the rapid development of modern events.

In order to provide a clear concept of the Army's mission, and to achieve a unified conviction among our people, we must wage war against this propaganda, and shed light on obscure conclusions, revived ancestral sentiments, and false ideas. One such false idea is that France can find salvation only in neutrality. This idea, which is based perhaps on false analogies with Switzerland, simply passes over geographic, political, and demographic considerations. It is impossible for a country like France, with its strategic geographical location and political and economic in-

fluence in the world, to have the same reflexes as a country like Switzerland, which is shielded by mountains and has had a 300-year history of neutrality.

A Place in World Affairs

Nations cannot escape from their destiny as written in history and geography. France constitutes a part of Western Europe which, although ruined by its discords, overturned by two great wars, and fallen from its place of preeminence, represents a strategic influence and value in world affairs, and, therefore, cannot remain outside of any conflict between the United States and the Soviet Union.

To minimize the importance of Europe is to demonstrate a lack of understanding; to believe that it could remain neutral in the event of another great war is to seek refuge behind foolish fancies.

Moreover, to leave Brest—or for that matter, any other section of our country—to the mercy of a raid of motorized Cossacks is not only an inconceivable abandonment of our history and traditions, but a dangerous temptation for fifth columnists.

However, if it is necessary to organize a defense, it is also necessary that it should correspond to our capabilities and not to dreams of grandeur which have no relationship whatsoever with present conditions. At the present time, most Frenchmen believe that the Army is costing too much money, and that they are not getting their money's worth. The military, confused by such accusations, do not always know how to reply and explain our present weakness in spite of the size of the military budgets which have been voted during the last 5 years.

Military Budgets

As a matter of fact, sums which appear large in themselves were small in relationship to the cost of modern military equipment. It is sufficient to state that the cost of equipping an armored division is 100 billion francs, and an infantry division 50 billion francs, in order to understand that the budgets of 1946 and 1947 were capable only of restoring equipment which had been worn out by the war. Moreover, the French financial effort was oriented solely along the lines of reconstruction and modernization, which, it should be recalled, included no expenditures for expanding our armed forces. This same situation was evidenced again in the budgets of 1948 and 1949, which represented only enough money to maintain our armed forces and pay the costs of the war in Indochina. In addition, the subsequent increase in 1950 was not able, immediately, to change a situation which had been bad for the past 5 years.

What Size Force Is Needed?

The study of the recent past does not have to lead to an excess in the other direction, because the limits of our peacetime possibilities may be estimated by a calculation of the mean percentage of the military expenses in comparison with the total budget. This method may give a sufficient approximation of the possible size of our armed forces.

If we confine ourselves to the last 25 years, an examination of the budgets shows that, in peacetime, the part of the national budget assigned for military expenses varied between the extremes of 15 percent in 1925 and 35 percent in 1938.

With the present expenses of reconstruction, and taking American aid into account, the figure of 30 percent should be regarded as the maximum. Throughout the years during which this effort will be made, the total will remain practically constant, for the reductions in reconstruction expenses will be counterbalanced by similar reductions in American aid.

Applying this theoretical percentage to the budget for 1951, we obtain the figure of 750 billion francs, which corresponds

within about 12 billion francs with the provisions of Parliament (738 billion francs). However, because of personnel increases in our forces, a result of the 18 months' period of service, it may be estimated that only about 50 percent of the 300 billion franc increase over last year's budget will be spent to improve matériel.

The distribution of appropriations is as follows:

Indochina and the French Union	220 billion francs
Navy	98 billion francs
Air Force	130 billion francs
Ground forces	220 billion francs
Common appropriations	70 billion francs
Total	738 billion francs

A Heavy Burden

What strikes one, to begin with, when he examines these figures, is the share appropriated for Indochina in comparison with the total budget. The war in Asia is a heavy burden for rearmament in Europe, because it absorbs not only 30 percent of the appropriations, but 37 percent of the officers and 27 percent of the noncommissioned officers. That represents the amount required to equip approximately 5 infantry divisions, and the personnel required to provide the cadres for 10 divisions.

Under existing circumstances, the Navy regards itself as being fortunate to receive the amount appropriated for its use, and the Air Force is barely able to maintain the minimum slice of its 5-year plan, which, when completed, will provide it with only 1,000 planes. In addition, the ground forces, which are able to use only about 84 billion francs of their appropriation for new matériel, will require large deliveries under the Marshall Plan if they are to carry out their program of modernization and be able to organize new units.

Therefore, without being pessimistic, one can admit that as long as the conflict in Indochina lasts, France will have a heavy handicap in raising any large part of the covering forces needed in Europe. Nor are the Benelux countries or Italy able to station any large forces along the Iron Curtain. In addition, neither Great Britain nor the United States, absorbed as they are by the present world situation, are able to send the forces necessary for assuring an adequate ground cover in Europe.

German Rearmament Essential

Under these conditions, the rearmament of Germany is no longer a matter of choice, but a necessity—a painful and dangerous necessity. This indisputable reality, of which the Americans and the Soviets have long been aware, makes Germany the pivotal center of their policies. It is certain that the rearmament of Germany will not be the basis, but the crowning, of the Western rearmament, and its realization may be regarded as a victory, for it will mark the end of the danger of immediate occupation and a recession of the influence of the Cominform in the West.

By a strange paradox, French and German public opinions, though based on different premises, are agreed in their uneasiness and refuse to look forward to this eventuality.

As a matter of fact, the amplification of the Atlantic Pact and its strategic necessities, which are on a semi-world-wide scale, inevitably run up against the ancient political reflexes of countries which have been accustomed, heretofore, of making coalitions, not of having to submit to them. This inferiority complex, which is new for the French, creates, to a certain extent, an element of distrust which threatens to obscure the fundamental issue of the problem.

A Great Role to Play

To give confidence, again, to the French, and to cause them to adhere wholeheart-

edly to the Pact, it is necessary that they understand that, even under an Anglo-Saxon command, they still have a great role to play which corresponds to their tradition, to their interests, and to their geographical position: that of assuring, at the head of their continental allies, the cover of Western Europe.

Although Great Britain, during the *blitz* war, felt the awakening of her European consciousness and, since that time, has made considerable efforts in the direction of the defense of a continent which she feels is drawing nearer to her, she never forgets the Channel.

Geographically, and by temperament, the average Briton is an islander. However, economically, and out of necessity, he is but half of this. It is these two factors which may explain a British attitude which is not always purely logical.

The British, since the end of the last war, have been attempting to retain the unity of the Commonwealth, subjected to the centrifugal forces of the war and the attraction of the United States. This struggle has, as its stake, the existence itself of their country and, under these conditions, it is normal that they should be interested in Europe in only a secondary way.

In spite of her desire and ambition, Great Britain has neither the geographical position nor the means that will permit her to claim the role of "leader" of the European Continental Defense, of which she remains, nevertheless, a decisive element, thanks to her air force and her fleet.

The United States, for its part, has world-wide strategic interests which prevent it from devoting itself entirely to one theater of operations, regardless of its importance.

Moreover, the problem to be solved, from the American point of view, has nothing in common with the European problem. On the one hand, back of more than 1,800 miles of ocean or frozen wastes, it is obliged to see to the shipping of a gigantic production, and, on the other hand, it is obliged to contain, immediately, a common enemy.

Our position in the vanguard of Europe imposes on us reflexes, an organization, and matériel which will be, necessarily, different from those of our ally across the Atlantic, or even across the Channel.

France, therefore, is particularly well placed for inspiring, for rationalizing, and for conducting the armed forces which, in the event of a conflict, will have to prevent the invasion of Western Europe and ensure the necessary cover between the time of the surprise attack and the arrival of allied reinforcements.

It is in this mission that the French can find a role worthy of their past, adapted to the present, and which will hold promise for the future.

However, to play this role, once it has been understood, it also must be desired.

In all periods of history, it has been through the means of the necessities of national defense that technical progress has overturned civilizations and obliged human society, which is always slow to evolve, to adapt itself to new conditions. The conquered peoples are not always the poorest, but they are always the least adapted.

Two Dominating Features

Now a study of the present evolution enables us to see that the next conflict will be marked by two, undeniably dominating features: ideology in the intellectual level and mechanization in the material level.

Contrary to what one might believe, wars of conquest are not always the most devastating, for it would be stupid to destroy what one wishes to appropriate. On the contrary, however, ideological wars present a complete gamut of atrocities, such as we saw in the last war on an un-

paralleled scale: mass exterminations and the deportation of millions of people.

The principal stake of the conflict whose preliminaries we are passing through at the present time will not be the possession of new lands nor the conquest of economic markets. Rather, it will be the occupation of immense strategic zones (Europe and the Middle East), whose domination can be guaranteed only by political and social transformations which will upset the life of every individual.

To this inflexible characteristic which men will give to the next war, machines will add the features which characterize them: brutality in action, slowness of construction, rapid aging—all of which pose important long-range planning problems.

Time Is Important

It was never possible to improvise an army, for, even when the matter of equipment was relatively a secondary problem, the training of cadres and fighting forces required a long period of time. Now, in terms of modern, mechanized warfare, time is not counted in months, but in years—for wars are won in the laboratories before they are won on the battlefields.

In a country where the idea of revenge had quickened energies and whetted wills for 44 years, it now seems impossible to obtain unanimity, even though we face losing what is most precious to us: our manner of living.

When one is a neighbor to a country whose political organization permits the secret and total organization of its economy for war, there remains no choice but the acceptance of one of two possible courses of action: an acceptance of the danger involved, or the building up of military forces which will be as strong and efficient as the enemy's.

It is not the form of government that matters, but the spirit which stimulates the country, that is, its representatives. Organization, authority, effort, and idealism are not the exclusive property of autocracies: America has proved that to us, and the construction of the atom bomb has shown that a democracy is also able to keep secrets and possess broad vision.

Preparation Required

The indispensable thing is that a far-sighted group prepare industrial production on the scale required by modern warfare, and, at the same time, shape the masses by reforms and psychological measures which will unify them in their convictions and immune them from the effects of enemy propaganda.

By virtue of her geographic position, France is capable of being the stimulating force behind the defense of Western Europe. She must know this, accept it, and make the necessary effort to bring this about.

This effort, which will be limited by our financial capabilities, must be a national contribution. To achieve this, the public must be told the aims to be reached and the sacrifices to be made, for, at the present time, public opinion is but little enlightened.

The weapons which come to us from overseas are not destined for mercenaries, but represent the "first allotment of equipment" for an army which must be the reflection of the entire Nation.

Let's Face It

Digested by the MILITARY REVIEW from an article by Chalmers H. Goodlin in "Aviation Age" (United States) July 1951.

NEARLY every city of consequence in the United States is—or had better be—setting up its civil defense organization. The main reason for such defense is that the Soviets have a growing stock pile of atom bombs and the means to deliver them.

The people have been told by no less an authority than the Chief of Staff of the United States Air Force that, despite our best defensive efforts, 70 percent of a determined attacking force would get through to strike at our cities.

Needed: More Realistic Viewpoint

However, an alarming number of our citizens still choose to view the Soviet Union in the light of her social weaknesses, and lose sight of the technical competence and effort which made possible the existence of its A-bombs and long-range bombers. We have not yet grasped the full significance of Soviet air power. The pilots who have met the *MiG-15s* in Korea testify that they are well designed and constructed fighters. They are more heavily armed and faster in the climb than the best jets the United States Air Force now has in service. General Hoyt S. Vandenberg says the soviets "have a jet engine in the *MiG-15* that is superior to any jet engine that we have today."

Further testifying to the *MiG-15's* combat qualities, Colonel John C. Meyer, former commander of the 4th Fighter-Interceptor Group, declared it was "one of the world's two best existing planes for air-to-air combat, judged solely on its flying characteristics."

Yet, many Americans still find it impossible to reconcile a Soviet slave state with the up-to-date aeronautical know-how that is responsible for these and even newer jet engines and aircraft. People who think this way will not be comforted by the revelation of at least three Soviet fighters which are later and better than the *MiG*. The latest of these is known simply as the *P-13A* after its original German designation. This delta-wing "flying wedge" is of entirely unconventional design. In its experimental version, the *P-13A* is capable of sustained supersonic speeds, and probably is further along in development than any American fighter of comparable performance.

'Soviet B-36'

Americans can take still less comfort in the knowledge that a prototype "Soviet *B-36*"—provisionally designated the *TuG-75*—is well along in construction.

This state of aeronautical progress in the Soviet Union was attained through a tremendous application of effort and the intelligent, if ruthless, use of the essentials that go to make up air power: technology, materials, and manpower; backed by rapidly expanding military and civil transport systems, large-scale flight training programs, and a remarkable degree of public air-mindedness.

However, the real significance of Soviet progress lies in a less-obvious fact which is not generally appreciated: *The Soviets were far enough advanced in their own research to be able to take immediate advantage of the most advanced ideas of the United States, Germany, and other nations, whose secrets they came by through expropriation or espionage.*

Interest in Jets

Soviet interest in jet propulsion, for instance, dates along with American efforts. They learned of the earlier *Luftwaffe* experiments with turbojets, but there is some evidence that the Soviet scientists were not completely sold on jets at the time.

Then, in 1942, despite their preoccupation with the advancing German armies and the movement of their industrial plants behind the Urals, the Soviets began the research into what they called the "reaction engine." Early in 1943, at Stalin's command, four of the most talented thermodynamicists were provided with a staff and the facilities of the TsAIM power plant research center. Their names are now better known as Chelomey, Shvetzov, Kostikoff, and Charomskii.

The following year, a hand-built *MiG* prototype powered by a captured German engine and designed by Mikoyan and Gurevich was flying as far afield as Germany. This plane and its jet power plant performed well enough to survive several combats with *Luftwaffe* jets around the Berlin area.

Parallel Research

Obviously, then, Soviet research must have paralleled to a certain extent American and British developments with turbojets. It is well known how the Soviets acquired considerable German technical equipment and personnel before and after VE-day. In fact, many quarters attribute the so-called "sharply rising qualitative curve" in Soviet aero equipment of all types to the fruits of these captured facilities and scientists. However, this is only part of the story which fails to take into account subsequent Soviet progress. Chelomey and his colleague Kostikoff were assigned to the further development of the captured *Jumo .004* and, later, the *BMW .003*, instead of having to start at the beginning with these engines to learn the ABCs of jet propulsion.

Early Rocket Use

Rockets, as another example, were used by the forces of the USSR long before the Germans employed these weapons. In fact, their rocket bombs proved to be among the Soviet's best weapons against the panzers in 1941-42. And this prior experience with rockets makes more understandable their rapid progress with "absolute weapons" of the guided-missile type. The Soviets are known to have a rocket missile that can be launched from submarines.

A-Bomb Carrier

A versatile designer named Tupolev had been busy, meanwhile, developing a carrier for atom bombs. He had been ordered to lay aside his own heavy bomber design and dissect the three American *B-29s* which had made forced landings near Vladivostok late in the war. Tupolev and his staff obtained surprisingly prompt results.

American and British engineers considered this job of pirating the *B-29* to be one of the outstanding feats of Soviet industry for this reason. The task of getting into production both the 72-passenger *Tu-70* transport and *Tu-4* bomber copies must have amounted to a major triumph for not only Tupolev and company, but the Arms Trust which duplicated our RCT fire-control system.

Turbojet Field

The jet men did just about as well in their area. However, there is more evidence here of direct German technical aid. Somewhere along the line, the youthful Chelomey appears to have overshadowed his colleagues, since at least three turbojets—including the faithful Rolls-Royce *Nene* copy—bear his name. More to the point is how quickly and how well the Soviets duplicated the British power plant which, incidentally, also is built under agreement in the United States as the *J-42*. Original contracts were negotiated with Rolls in January 1946, but the final shipment on the Soviet order for 55 *Nene* and *Derwent* engines was not completed until January 1948.

Nene Improved

In less than a year's time, the USSR had the Chelomey-*Nene* in production for at

least three different airplanes. Moreover, they improved the turbojet with redesigned combustion chambers and a new injection system. Pilots flying this engine can stay on water injection for several minutes running, pulling in the neighborhood of 6,000 pounds of thrust. A few *MiGs* have been fitted experimentally with a still better injection scheme which utilizes the highly superior jet fuel known as "hydrazine hydrate." There are indications that this system will be in service soon on a large scale; and our sources agree that its use is expected to boost *Nene* power up to the 7,000-pound category. The clue to the hydrazine injections is said to be puffs or streams of vapor.

However, an even newer, more powerful turbojet already is in service. This is the *M-018*, developed by Shvetzov, which produces about 7,700 pounds of thrust. It is the power plant for the late model *Tu-10* "storm" bombers which are being produced in large numbers for ground-support operations.

Soviets Got the Best

The most noteworthy developments, however, lie in the field of ramjet power plants. Successful engines of this type have been flying experimentally for some time, using petroleum fuels and unconventional fuels such as powdered brown coal. The implications of coal as an aviation fuel for the Soviet Union, which cannot get quite all the oil she might like to have, should be self-evident.

The German contribution to aerodynamics is more significant because the Soviets were not so well advanced in this field as in other areas of research. However, America and Britain, as well, capitalized on such German technical data as we obtained. The Soviets, however, secured more projects and project engineers, more air matériel of all kinds, and technicians. And the unpleasant fact remains that Stalin made use of this war booty during the valuable years we carried on great debates about such things as appropriations. General Vandenberg emphasized the importance of this personnel in his recent testimony: ". . . Where we have a finished article without the brains and thinking that developed it . . . and all the faults that they have overcome in the process . . . we cannot possibly begin to discover all of the difficulties . . . they had to overcome."

Soviet Production High

"The Soviets just can't match our production. Nobody ever has, and that's what wins wars." You hear this often today, after a year of casualties in Korea. What they mean is that the USSR is not likely to match an all-out war-mobilized United States production—*but we are still 70 percent butter and 30 percent guns.* Moreover, the Soviets have a terrific lead. Our leaders revealed to the public early in 1948 that the USSR was outproducing us by at least 20 to 1 in military aircraft.

Although Soviet production was estimated by official quarters as 19,000 aircraft for 1950—while the United States produced only 3,000 military planes—their airframe weight in the past amounted to about one-fifth United States capacity. Greatly increased plant capacity is evidenced, however, in the Soviet production of some 1,700 *Tu-71* (*B-29* type) bombers and probably 300 of the big *Tu-70* transports.

The largest of the known 25 to 28 major plants occupies a site at Gorki, with more than 1,350,000 square feet devoted to final assembly. (This compares in size with the North American—wartime Curtiss-Wright—factory at Columbus, Ohio.)

Hot Pilots

A further factor to be considered is the human element. During World War II, the Soviet airman lived down his reputation for being a peasant with mechanical aptitude—a view totally unfounded in the first place, and one which may regain popularity in view of our Korean victories. How-

ever, we are not yet tangling with Soviet pilots, at least in appreciable numbers: the "*MiG* Alley" gang is believed to be made up of Chinese pilots, a few ex-*Luftwaffe* men, and Soviet "tactical advisers" who fly an occasional mission. One of the Fifth Air Force pilots put it eloquently: "This show is rugged now. . . . When we really meet the 'first team' it's going to be one grand hassel."

United States fliers should maintain an edge in night and all-weather flying, on which we place greater emphasis in training. We may also retain the advantage—demonstrated thus far in Korea—of superior gunnery and air discipline; but the Soviets too are learning over there.

Take these good pilots in good airplanes, plus current military aircraft production far in excess of all the North Atlantic Treaty nations combined; add to this sound atomic, guided missile, and radar progress, plus maximum effort in aero research; then mix well with Josef Stalin's doctrine for "world liberation." The end result is a prescription for disaster to Western democracy which, let's face it, will not be surmounted by complacency.

Apr 1952

In spite of the fact that air power alone can never be decisive in total war, the air battle must be won. In spite of all the new developments in the field of atomic energy and the various military applications, the airplane continues to be the best method of projecting the power of the atom to the battlefield, and to the heart of any large land-mass nation.

General of the Army Omar N. Bradley

While our monopoly of atomic energy has been broken, we still retain leadership in this field by a wide margin. And while our leadership in military air power is now seriously challenged, our experience and knowledge in the use of the air is unequalled. I, for one, can find no reason for a pessimistic view. If we so will, it lies well within our means not only to regain our former position of supremacy in the air, but also to retain it.

There is no better way to safeguard the peace of the world.

General Hoyt S. Vandenberg

Reflections on the Air Supply of Encircled Units

Translated and digested by the MILITARY REVIEW from an article by Dr. Theodore Weber in "Flugwehr und -Technik" (Switzerland) October 1951.

THE basic requirements for the adequate air supply of army units surrounded by the enemy may be stated as follows:

1. A sufficient number of transport planes.

2. A dependable ground organization (personnel, equipment, and airfields) outside of the ring of the encirclement.

3. A dependable ground organization (personnel, equipment, and airfields) inside of the encircled area.

4. Air superiority over the operational area.

With respect to the first requirement, the number of planes needed for an air supply operation depends on the needs of the encircled forces in the way of rations, ammunition, and motor fuel. However, as a rule of thumb, it may be assumed that a minimum daily requirement of 2.2 pounds of rations, and an equal amount of ammunition and motor fuel, will be needed for every man involved. According to this, if there are 300,000 men to be supplied by air (such as at Stalingrad), a minimum of 600 tons of supplies daily must be brought in by air. If the capacity of each plane is 2 tons, then 300 flights each day are necessary.

With respect to the second requirement, the ground organization must be of such a nature that the number of planes required for the operation can be manned, serviced, and accommodated without delay. In addition, the airfields must be protected against possible air or ground attacks by the enemy.

The remarks made above in regard to the second requirement apply in all respects to the third requirement.

The fourth requirement is self-explanatory and does not require further amplification.

The Air Supply of Stalingrad

Was the *Luftwaffe* able to meet these basic requirements in its operations to supply the German Sixth Army which was encircled at Stalingrad? The answer to this question was given by the Chief of Air Supply, Brigadier General Fiebig, and the commander of the German 4th Air Fleet, General von Richthofen. Both of these officers considered an adequate air supply at Stalingrad impracticable, and tried, at every opportunity, to convince Hitler that the Sixth Army should attempt a break-out from encirclement. Hitler, however, left the Sixth Army on the Volga, having been assured by Göring that the *Luftwaffe* would have no difficulty in supplying it by air. (The minimum daily requirements for the Sixth Army were set at 300 tons.) That Göring gave this assurance is maintained by Field Marshal Milch, and the Air Transport Commander of the *Luftwaffe*, Lieutenant General Morzik. However, it is not clear from what source or figures Göring obtained the basis for such an assurance. Possibly, it was the successful air supply of Demyansk, which had been carried out the year before, but which represented only about a third of the effort required at Stalingrad.

Available Aircraft

At the beginning of December 1942, the German Eighth Air Corps (Fiebig), which had been assigned the air supply operation at Stalingrad, had at its disposal the following formations: 11 transport groups of *Ju-52s* (a total of some 200 planes), with a load capacity of 2 tons for each plane; 2 transport groups of *Ju-86s* (around 20 planes, but soon withdrawn from the operation), with a load capacity

of 1½ tons for each plane; and 6 transport groups of *He-111s* (a total of some 100 planes), with a load capacity of 1½ to 2 tons for each plane.

Principal Airfields

The principal take-off bases for the operation were at Tazinskaya airfield (*Ju-52s*), 150 miles from Stalingrad, and at Morosovskaya airfield (*He-111s*), 155 miles from Stalingrad.

The equipment mentioned above would have been sufficient for bringing in about 300 to 450 tons of supplies each day, as long as all planes continued to be operational. And even before the evacuation of the two principal airfields outside of the encirclement (Tazinskaya and Morosovskaya), which was forced by the advance of the Soviet forces, during the end of December, there were still 180 *Ju-52s* and 150 *He-111s* on the airfields. The theoretically required number of planes was still on hand. In the middle of January 1943, there were 280 transports still available, and, by the end of that month, the number had increased to 363. From these figures, we can deduce that the Germans never fell below the minimum number of aircraft required for the supply operation, and that the German aircraft industry was able to replace the planes which were lost.

Operational Readiness

However, it is doubtful whether the *Luftwaffe* High Command realized how rapidly *operational readiness* could decrease (especially in winter), and how little *operational strength*, by itself, really meant. It is operational readiness that is decisive in war, and this is usually considerably lower than operational strength.

With regard to the operational readiness of the German transport planes during the Stalingrad operation, the following is significant:

At the beginning of December 1942, out of a total of 320 planes on hand, only 80 to 90 percent were operational.

At the end of December 1942, out of a total of 330 planes on hand, approximately 50 percent were operational (exact figures for this period are not available).

Around the middle of January 1943, out of a total of 280 planes on hand, only 25 percent were operational.

At the end of January 1943, out of a total of 363 planes on hand, only 35 to 40 percent were operational.

At the beginning of February 1943, out of a total of 363 planes on hand, only 10 to 20 percent were operational.

To have maintained the requisite number of planes at 100 percent operational readiness would have required more than 1,000 transport planes, and the German aircraft industry was not capable of such an achievement at that time. For example, during 1943, only 887 *Ju-52* transport planes were built.

What was the cause of this low operational readiness? The two principal reasons may be listed as bad weather—with its resultant snow-covered runways, extremely low temperatures, and icing conditions—and a lack of equipment for warming the engines and de-icing the aircraft.

Air Activity

Starting around the first part of December 1942, air battles over the encirclement became more and more frequent, because the Soviet Air Force was attempting to prevent the arrival of supplies into the encircled forces. However, up to this time, the Germans seemed to have had air superiority. Also, beginning about the same time, bad weather was making itself felt in the operation of the *Luftwaffe*, and this reduced the number of missions which could be flown each day. For example, on 5 December 1942, only 28 planes flew into the encirclement. The high point of the air supply operation was reached on 19 December 1942, when 154 planes flew in with 290 tons of supplies; but this was

still 10 tons short of the estimated minimum requirements for the Sixth Army.

A few days previously, a relief army (the German Fourth Armored Army) had launched attacks in an effort to reach the encircled force. In spite of the efforts of the relief army, the continuation of the air supply and the attacks of the German bombers were considered vital prerequisites for effecting the break-out, but bad weather decreased bomber and transport activities appreciably.

Forced Withdrawals

On 25 December, a series of withdrawals was made to keep the airfields outside of the ring from being overrun by the Soviets. This increased the operating distance of the *Ju-52s* by some 117 miles, and the *He-111s* by some 93 miles. At the same time, Soviet air attacks on the airfields increased the losses of the German transport planes.

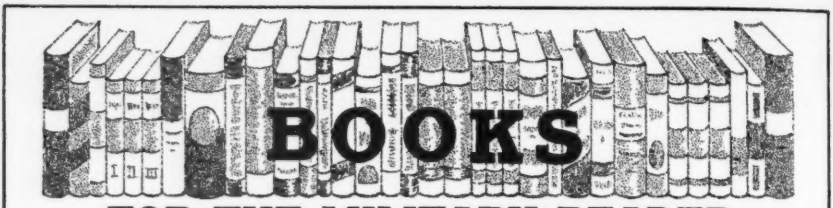
To offset these losses, new long-range planes were delivered from Germany. They were *Fw-200s*, *He-117s*, and *Ju-290s*, all of which revealed certain defects. As an example, the *Fw-200s* had too great a rate of fuel consumption, and were plagued with carburator troubles which resulted in many of them catching on fire.

In order to cope with Soviet air superiority, the fighters of the 4th Air Fleet were reinforced with additional aircraft. However, Soviet air activity soon brought about the disintegration of German fighter aircraft, and the *Ju-52s* and *Fw-200s* were forced to suspend operations during daylight hours. Only the *He-111s* were still able to fight their way through to the encircled forces, but, even at that, they were unable to land within the encirclement. From 18 January on, air supply was possible only by dropping containers by parachute.

Conclusions

During the entire air supply operation at Stalingrad (from 24 November 1942 to 31 January 1943) 4,500 to 5,000 flights were completed, 6,591 tons of supplies were delivered (approximately 96 tons a day), and 50,000 wounded troops were evacuated from the encirclement.

Although some 500 aircraft were lost during this operation (which from the standpoint of numbers only was equal to the entire German aircraft production of transport planes during 1942), it did not achieve its aim and purpose: the air supply of the German Sixth Army until the arrival of relief forces. There is no need of repeating the reasons for this failure. The air supply of Stalingrad bore, from the very beginning, the characteristics of a gamble, because the *Luftwaffe* High Command ignored the requirements for the successful completion of such a large undertaking. German aircraft production was not adequate for the maintenance of the operational readiness of the transport fleet. A secure ground organization, both outside and inside of the encirclement, did not exist, even during the initial phases of the operation. In addition, although the Germans had air superiority in the beginning, the Soviets were able to take over control of the air and retain it.



FOR THE MILITARY READER

ECONOMICS OF NATIONAL SECURITY. By George A. Lincoln, William S. Stone, and Thomas H. Harvey. 601 Pages. Prentice-Hall, Inc., New York. $6.65.

By COL ROY W. MUTH, *CmlC*

Economics of National Security was written to assist public understanding and for use in college instruction. Its preface explains that, "Since wars, hot, cold, and tepid, are conducted by governments controlling and directing the resources of nations, the authors write of government as much as economics."

The object of the science of economics is to determine what social control is necessary to bring our methods of making a living into harmony with our conceptions of the ideal life. This book describes our efforts through governmental control to perpetuate our national existence with the least disturbance to our progress toward the ultimate goal of ideal living.

In an industrial society, it is to be expected that extensive wartime controls will require large and complex organizations for their accomplishments. It also is to be expected that failure to comprehend all of the effects of action and pressures from various groups to acquire what they believe to be essential to their life will greatly complicate administration. This book covers these ramifications of wartime control, raises questions as to the desirability of certain of its features, and, in many instances, suggests more satisfactory means or fields for further study.

The discussions in this book also have value in considering peacetime controls. Passage of the Employment Act of 1946 [Public Law 304] made it public policy for the Federal Government to use all practicable means consistent with its need to co-ordinate and utilize all of its plans, functions, and resources to promote maximum employment, production, and purchasing power. Under such a policy, increased governmental control is highly probable. How far we want to go in peacetime controls can be judged more intelligently, with the knowledge of the causes and effects of wartime controls as a guide.

TURKEY. By T. G. A. Muntz. 194 Pages. The Philosophical Library, Inc., New York. $4.75.

A statistical report of the financial conditions, foreign trade, agriculture and livestock, industry, communications, public works, foreign aid and investments, and social questions in Turkey during the period from September 1947 to April 1950.

THE MEMOIRS OF HERBERT HOOVER: Years of Adventure, 1874-1920. Illustrated. 496 Pages. The Macmillan Company, New York. $4.00.

LIFE IN AMERICA. By Marshall B. Davidson. Two volumes. 571 Pages and 503 Pages. Illustrated. Houghton Mifflin Company, Boston. Published in association with the Metropolitan Museum of Art. $20.00 the set.

CHINESE COMMUNISM AND THE RISE OF MAO. By Benjamin I. Schwartz. 258 Pages. Harvard University Press, Cambridge, Mass. $4.00.

By CAPT WILLIAM H. BEAUCHAMP, *CE*

Subjective study of the early development of Chinese communism is the best means of analyzing the subject and it provides a means of predicting its future course, according to Mr. Schwartz. The reader probably will be strongly tempted to agree with the author after reading the first few chapters of this commendable book.

Mr. Schwartz feels that there is too strong a trend among current political thinkers and writers to view every political situation objectively in the light of contemporary economic circumstances and the interplay of outside political influences. His approach to his subject is one of studying the founders of the Chinese Communist Party by analyzing their writings. He then follows its development through 1933 by which time Mao Tse-tung had become its unquestioned leader.

The principal theme of the book is that the dynamic evolution of the Communist Party in China is very much of a Chinese phenomenon. This development, undoubtedly, was greatly influenced by the Soviet Union, but, nevertheless, it is fundamentally Chinese.

The Party got its start, in 1918, at Peking University with the formation of a Society for the Study of Marxism and was fundamentally intellectual for the first several years of its history. During the middle twenties, there was an attempt to give the Party a proletarian base, but, by 1933, Mao had developed a new and purely Chinese product—a Communist Party built not on a proletarian basis but on a peasant basis. Mao, unquestionably as astute a Leninist politician as Stalin himself (and Western leaders would be well advised to learn the fundamentals of Leninist, dynamic politics), has gone against the fundamental economic teachings of Marx, Lenin, and Stalin and produced a Communist state on a basis never conceived by them.

Mr. Schwartz makes no predictions for the future, but he has given us some useful tools for interpretation. He has clearly shown the distinctly Chinese basis for the nation that Mao built and thus indicates the possibilities there for some separation from the Soviet Union. Opposed to this possibility is the fact that Mao and those around him have completely mastered Lenin's concept of forceful political action and are intellectually close to Moscow in addition to their strategic affinity. The final answers to China's future are not given, but this book certainly gives the reader a clearer insight into the problem.

YANGTSE INCIDENT. The Story of HMS Amethyst, April 20, 1949 to July 31, 1949. By Lawrence Earl. 240 Pages. Alfred A. Knopf, New York. $3.00.

By LT COL WILLIAM H. SOUDER, JR., *USMC*

This is the story of HMS *Amethyst* trapped in the Yangtse by the Chinese Communists in April 1949. Although the author was not present, his interviews with 36 of the survivors allow the account to be related in a fast-moving narrative which realistically portrays men under fire.

During the 101 days the *Amethyst* spent under Communist shore batteries, the calm manner in which each member of the crew faced a situation unparalleled in history exemplifies the British sailor. Valor and devotion to duty were common virtues.

The final dash down the Yangtse for open sea will long be remembered for its daring and skill of execution. On 26 July 1949, the *Amethyst* proudly flashed to the Commander in Chief: "Have rejoined the fleet . . . God save the King."

DANCE OF DEATH. By Erich Kern. Translated from the German by Paul Findlay. 255 Pages. Charles Scribner's Sons, New York. $3.00.

By CAPT SELWYN P. ROGERS, *Armor*

Written by a loyal Nazi, a journalist by profession, and an *SS* officer by choice, this book casts a new light on the German campaign against the Russians. The underlying theme is one of disillusionment and confusion in the mind of the author; however, he gives a remarkable account of front-line combat against Red Army men who he describes as dying as they lived—like machines. Some of the best action scenes in this book are described in the chapter "Tank Warfare in the Caucasus."

Kern concludes the "great delirium" is over in Germany, but claims his country has given the whole world a look at the Soviet Union—its aims and dangers. He warns that the world has yet to acquire a political and psychological understanding of the extent to which bolshevism has carried the mechanization and conditioning of the Russian people.

For the student of military government this story is of particular interest. In it, the author shows the Russian people under stress; and he discusses the mistakes of the German administration which not only failed to make use of millions of "liberated" Ukranians, who could have helped immensely, but actually repulsed and disillusioned them.

All through the accounts of fighting are found observations like this one: "Within Russia itself, it has come to the point where men and women starve and want, thinking all is well, that that is what life is. They cherish their chains, never having known anything different!" To show all is not yet lost, however, one old Russian woman is quoted by the author, "The Russian people will not be saved by the man with the bigger gun, but by the man with the greater soul."

LA DEFAITE ALLEMANDE A L'EST. By Colonel Léderrey of the Swiss Army. 272 Pages. Illustrated. Charles-Lavauzelle & Co., Paris. 795 francs.

By LT COL WLADEMIR F. BOUÇAS
Brazilian Army

After stating that the Versailles Treaty, which should have represented the *epilogue* of all global conflict, was only the *prologue* to an even greater war—since Germany took advantage of the misunderstanding between the conquerors—the author analyzes the events before and after the Moscow Agreement of 1939, an agreement which left Germany free to do as she pleased on the European Continent.

Colonel Léderrey comments on the two of the forces then in being—the German *Wehrmacht*, its High Command and doctrine, including the concept of the *Blitzkrieg*; and the Soviet Army, its development and quality.

He also studies, separately, the plans and battle orders of both belligerents and follows this by an analysis of their operations, adding 27 different sketch maps for better understanding.

This is not a recitation of historical facts obtained from German and Soviet sources, for the author accompanies all data with his own personal comments which make the book very worth while for the military reader.

TIME OUT. By John A. Vietor. 192 Pages. Richard R. Smith Publisher, Inc., New York. $3.50.

An outstanding factual story concerning life in an airmen's prisoner of war camp. Writing in an easy manner, the author provides the reader with a very vivid description of the prisoners' daily life, humor, and problems.

LEADERSHIP. Compiled by William Russell White. 2,238 Pages. Two volumes. Meador Publishing Company, Boston. $20.00.

Qualities that have made leaders down the ages: a symposium.